



Small Farmers Secure Food

Survival Food Security, the World's Kitchen
&
the Critical Role of Small Farmers

Lindsay Falvey

Small Farmers Secure Food:

**Survival Food Security, the World's Kitchen
& the Crucial Role of Small Farmers**

Lindsay Falvey
2010

Dedicated to
Professor Derek Tribe AO OBE FTSE,
mentor and influential international
agricultural scientist
of a valued generation,
who among much other advice,
led me twice to The Rockefeller Centre
in Bellagio, the birthplace of this book.

Cataloguing info

Table of Contents

Page

Dedication and Cataloguing Information
Acknowledgements - of the continuing past
Feeding Rome; Feeding the World

Chapter 1 Introductory Words

Chapter 2 Food, Farmers and Fallacy

Secure Food Producers
False Security
Where Did We Go Wrong?
A Short Re-view of Economics
Common Needs
Uncommonsense
Re-Integrating Economics
Rights to Food
Un-Free Food Trade
Food as a Commodity
Commoditization Leads to Speculation
Lessons of the Recent Past
Life and Death Risks
Supply and Demand
Policy Approaches

Chapter 3 Securing Enough Food to Survive

Rediscovering Food Security
Forgotten Food; Forgotten Famines
Fundamental Knowledge
Food Crisis and Foreign Aid
International Approaches
Variables in Food Security
Food Reserves

Food Security and the Recent Crises

Chapter 4 Forgotten Food Producers: Small Farms

- Billions of Third-World Small Farmers
- Correcting the Bias
- Small Farmer Advantages
- Awakening to the Continued Role
- Challenging Worldviews
- Shifting the Paradigm
- Towards a Small Farmer Friendly Policy

Chapter 5 Why Bite the Hand that Feeds?

- Mess and Confusion
- Economic Development Pathways
- The Arrogance of Ignorance
- Gutenberg's Legacy of Ignorance
- We Know Best – Free the Food Trade
- Let Them Eat Brioche
- Non-Revisionist History
- The State of Agricultural Science
- Institutionally Marginalizing Small-Farmers
- Changing Emphases in Food Security
- Conjuring up Wisdom

Chapter 6 Good Governance starts with Food Security

- Why Agricultural Planning Fails
- Causes of Policy Void
- What is Good Governance?
- Good Governance of Food
- Dissipated Security – Weak Governance
- Good Governance – Absence of Conflict
- Fiat or Fantasy
- Rich Country Governance
- Rich Country Contributions to Food Security

Chapter 7 From Criticism to Action:

Refocusing on Small Farmers and Food Security

iv *Small Farmers Secure Food*

An Old Argument
Revaluing a National Asset
Writing-Off the Party Line
Watering Down Dry Messages
Small Farmer Irrigation
Focusing Research
Making Extension Practical
Letting Small Farmers Develop Privately
Skills not Dills
Small Farmers and Innovation Science
The Personal Touch of the Small Farmer
Credit Where Credit's Due
No One Recipe

Chapter 8 Practical Food Security from Small Farmers

The Human Plague
Farm Size and World Hunger
Revising Present Views
Future Food

Poem: First Food!

Some Acronyms
Books by the Same Author

Acknowledgements

- of the continuing past

Feeding Rome; Feeding the World

Our food comes from nature. We manipulate nature to ensure that we have a regular supply. Those who seek to secure food without respecting nature are doomed to mass starvation. This is why humble agricultural scientists silently toil even as society misunderstands their work as unnatural and dirty. They know the importance of maintaining food production. They know the alternative is anarchy, the demise of society. And they know that most of the world's food is grown by small farmers in poor countries. Or at least that has been the case until recently.

What has changed is not the need for food, or who produces it – the need is greater than ever and small farmers remain the world's major producers. It is the agricultural scientists that have changed and all who surround what was once one of man's greatest acts of coordination. That peak of human achievement to feed a population of billions built on the knowledge that all successful civilizations have held food security as a prerequisite of national security. This is no longer true, and the consequences are with us already. Our society is so removed from its food sources that we mistakenly attribute food-induced crises to such secondary outcomes as diseases and conflict.

Of course an aging agricultural scientist would say that! He might go on and make his message less unpalatable by suggesting that wasteful government spending be curtailed and civil servants be more civil and provide more service. But then he would be joining a chorus from Zhou China and Vedic India to Pharaonic Egypt and Caesarean Rome. It was in ancient Rome that Cicero's observation of civic decline mentions poor fiscal management, indigence and

vi *Small Farmers Secure Food*

abuse of government positions. But it was farming that he considered the best of occupations, which he defended at law as being a 'teacher of economy, industry and justice'.

From Cato's 'De Agricultura' to Columella's 'Res Rustica' to Pliny the Elder's 'Naturalis Historia' we have philosophy mixed with technology as a basis of society. In fact, Pliny the Elder's precursor of all modern encyclopedias was sponsored by a dynasty that had learned the centrality of food security for Rome – Vespasian's Flavian Dynasty. We owe this knowledge about food and Rome to Pliny's nephew, Pliny the Younger, who writing in his villa above Lake Como, used agricultural metaphor to explain an argument on rhetoric. All this points to food security in ancient Rome being in good hands. By CE 100 Pliny the Younger was even claiming that Rome did not need Egypt's grain, although this may have been hyperbole. But in fact, it was during the time of the two Plinys that food security was used as the lever for a coup d'état.

Today, overlooking Lake Como as I sit on the site of Pliny the Younger's villa to collate this book on food security and small farmers, I am impressed by the parallels with that earlier Roman experiment in civilization. Just as Pliny, captured in marble on his lake-dividing moraine above Bellagio, had time here to contemplate his extra-senatorial interests, so the Rockefeller Foundation again generously affords me time to contemplate this greatest of world issues. The parallels extend even further than daydreaming in Pliny's chair.



During the 60s, ancient Rome experienced one of its food crises. Its vast grain network in North Africa was of no value as mismanagement and conflict interrupted shipping. The great

Empire had neglected its own food security in the latter period of Nero's reign and the ensuing years of revolving Emperors and civil wars. It took a capable leader to reestablish the essential security of the Empire by first of all securing its food supply. That man was Vespasian, who in fact may have withheld food to focus attention on his military superiority, and having gained control secured food, repealed unfair laws, reintegrated Greek provinces, rewarded honesty, supported natural philosophers and commenced major constructions, among them the Coliseum. As Emperor from 69 until his death in 79, Vespasian established the Rome we think of today with workable administrative systems and sound organization, minimal corruption and the rule of law. His success in assuming control of the Empire derived from his respected simplicity of lifestyle.

Vespasian understood food and thrift. Having risen through ability from inauspicious origins, he financed his earlier career governing the food bowl of North Africa by working with mules. His common touch may have facilitated understanding of the small farmers of Egypt and their need for a fair system. I find Vespasian a great man who merits more attention, but here I simply highlight his wisdom in governance beginning with securing food.

Vespasian's dynasty was carried on for two years by his capable elder son Titus, to whom Pliny the Elder dedicated his famous 'Naturalis Historia', and then by his other perhaps less tolerant son Domitian. Domitian reigned for 15 years continuing the rebuilding of Rome, ceasing religious persecution and rejecting expansionist warfare. His good governance instilled efficiency, penalized corruption and produced the most economically secure period of the Empire. Unworthy senators were expelled, nepotism punished and loyalty rewarded.

Popular with the people and the army, Domitian was despised by the Senate for he had abandoned the traditional façade of Senatorial

democracy. And so eventually he was assassinated. Here our story returns to Senator Pliny the Younger of Lake Como fame, who joined fellow Senators to expunge Domitian's public memory and write damning histories of his reign. Four years after Domitian's death, Pliny presented his 'Panygericus Traiani' to the Senate extolling the restoration of liberty and portraying Domitian as a tyrant. But the truth seems to be somewhere between; for Domitian's successor was his confidant, Nerva, who retained the established structure of good governance for a long-lasting dynasty, with food supply so secure that Pliny could argue that Rome was so great she no longer needed to rely on grain from her African province of Egypt.

Plus ça change, plus c'est la même chose. Vespasian's manipulation and management of food first and Pliny the Younger's insulated social position is today played out between the realities of global food insecurity and rich country views. And so it is doubly fitting that the principal site of Pliny's luxurious life is now used for reflective thought on such issues and is sponsored by The Rockefeller Foundation. For it was food underpinning political stability that led The Rockefeller Foundation to funding a small project on maize research in Mexico in 1941, which later became the International Centre for Maize and Wheat Improvement (CIMMYT). The rest is the history we know as the Green Revolution, spreading through Latin American countries, then with further Rockefeller funding to India and to the Philippines, leading to the International Centre for Research in the Semi-Arid Tropics (ICRISAT) and the International Rice Research Institute (IRRI) respectively. This vision then attracted the Ford Foundation and USAID commitment and later, the World Bank and the wider development community.

Today food is assumed to be secure. In wealthy countries there is no question. But ask the urban poor in less developed cities of the world, and you quickly learn that urban starvation occurred in a

2007-8 crisis of failed grain crops. The fact that it hardly featured in rich nations' media reflects a distance from reality that is now palpable. That wealthy countries have since been preoccupied by their financial crisis is hardly an excuse. Just as parochial Roman senators misconceived their food supply, so rich countries today blithely bask in ignorance of world food realities.

I see Pliny the Younger's rhetoric of Rome not having to rely on grain from Africa as much the same as that of today's policy makers who claim that free and open trade in food will solve food shortages. As I would have been a minority voice among the intelligentsia of ancient Rome, so I seem to be today. That is why I argue herein that it is absolutely critical that food security for healthy survival be the primary focus of agricultural research in poor countries and that food's main producers, small farmers, be the target.

*Lindsay Falvey,
Villa Serbelloni, Bellagio,
Lake Como June 2010
<lindsay.falvey@gmail.com>*

Chapter 1

Introductory Words

This is a simple book. It argues for a return of two critical values in international development, the securing of food for a minimal level of existence and acknowledgement of the vital role of small farmers in that basic level of food security. The diluted forms of these once central pillars of assistance and government have weakened them to the point that international development efforts are now increasing the risks of starvation in the world. Some of the facts and arguments presented here will be counter-intuitive to conventionally trained functionaries, and so illustrative data and information is provided in support of forgotten yet enduring axioms. The book also introduces the responsible actions of the world's major food producers, China and India, which were and are still criticized for abandoning the unsuitable agendas of international development agencies.

Small farmers feed the world. The statement is not an exaggeration when compared to the assumptions of narrowly trained development administrators that broadacre farms are more efficient than small farms. In the following pages, the higher yields and higher efficiencies of small farms are discussed as not just worthy of protection, but of encouragement through appropriate policy, research and social infrastructure development.

Food for survival is an obvious first order action of good governance, as illustrated with the preceding Vespasian case for ancient Rome in the preceding section, 'Acknowledging the Past'. Government and leaders who maintain stability by

providing basic needs before luxuries and ideology often go unsung. But when food crises occur, those who restore the basics of life are lauded as heroes. In today's poor world, the two billion small farmers who feed themselves and others are truly heroes who while unsung, must not be undone by poor governance. Otherwise, the result will affect not just their fellows in poor countries but all of us. As is increasingly evident in our interconnected and populous world, famines now mean violent riots and mass migration.

As a simple book advancing straightforward arguments to correct two aspects of international development actions, it is presented without references and footnotes. Those who seek to clarify or read more from those cited will find sufficient details of authors and agencies within the text to source publications. The argument flows from a general Chapter 2 outlining the present situation from diverse perspectives, to some detail in Chapter 3 about food production and security issues. Chapter 4 then examines the role and problems of small farmers. The discussion in Chapter 5 considers how we have arrived in this unfortunate position of ignoring or undervaluing critical aspects of development and human rights. Chapter 6 presents food security as a priority of good governance and leads into some practical responses to common mistakes in Chapter 7. The final Chapter 8 then brings the ideas together in conclusions and briefly considers the future of food production.

Chapter 2

Food, Farmers and Fallacy

Within part of the Western culture, normal human fears were once portrayed as the four horsemen of the apocalypse. Often embellished from the cryptic presentation in the Biblical book of Revelation, the four horsemen are commonly held to refer to pestilence, war, famine, and death. As in other cultures, sages have noted mankind's proclivity to destroy his own comfort and to then portray himself as an innocent victim, be it of pestilence, war or famine. Death is different – the consequence, the fear. I discussed our fear of death in 'Religion and Agriculture' as being expressed in today's spurious virtue of sustainability as a disguised form of religion's immortality. Fear of death from famine has its own apocalyptic horseman – the third – and it is he who informs us of the never absent need for good governance to ensure food security, and to support those who produce that food.

The horseman of famine carries weighing scales and is surrounded by an anonymous voice crying 'a measure of wheat for a day's pay, and three measures of barley for a day's pay, and take care not to damage the oil and the wine!' Fastidious measurement of grain when prices are high implies serious production shortages and hence famine. At the same time oil and wine production are protected. It sounds like an agricultural tour in 2008 when over production of olive oil and wine concerned one part of the world while another larger part suffered and died from grain shortages.

Being a Biblical passage, centuries of pragmatic explanations have been offered, such as annual grain crops being more susceptible to drought than deep-rooted olive trees and grapevines. But as is often the case in old scripts, such imagery may be influenced by the events of the era. At the time Revelation was written – around 92 CE – the Emperor was Domitian, whom we met in the preamble to this book, ‘Acknowledgements of the continuing past’. Domitian’s autocratic governance experienced a setback when he sought to secure small farmers and food by protecting grain production from vineyard and olive grove expansion. In this instance, he failed in his battle with the rich Senators and others of the privileged classes who enjoyed their status through vineyards and olive groves.

It seems the imagery of the four horsemen appeals more widely today in a pop form than through its historical meaning, be it religious or of ancient Rome. And without that understanding of the imagery’s context, the message is lost. Who among those who invoke the imagery in trite popular Western culture associates it with the perennial conflict between ensuring food security and short-term financial gain or comfort? How can this revelation awaken worldviews in wealthy nations that unconsciously warp development to their own image and so confuse otherwise sound intents of good governments in poor countries?

Secure Food Producers

If we have grown up in or been influenced by the worldviews of wealthy nations, it is normal to see financially poor countries through the same lens. The very terminology biases it – for rather than ‘financially poor countries’ we usually write ‘developing countries’. Likewise, we can see bias in other models of poor country economics. In his ‘The

End of Poverty', Jeffrey Sachs suggests stratifying production in poor countries into the three stages of commercial development – pre-commercial, commercial, and industrial/knowledge. The idea is not new, and has merit – notwithstanding its progressive bias about commerce.

In the case of small farmers in poor countries, we might estimate that something like 65, 25 and 10 percent in each of the above categories. Others may have better guesses – for there is no way of knowing at present – but the relativity will be less contestable. That the commercial category is not a higher proportion is the key to improved small farmer policy. It means that policy should not automatically assume that 'pre-commercial' farmers should be forced more into the commercial category. It would be better to revert to the more enduring terminology of subsistence farmers and not imply any commercial intent on the part of would-be developers. In any case Sach's categories aim more to define many sectors across a region rather than define policies for small farmers. However, this does not deter zealous development agents from invoking his authority to support interference with subsistence food producers.

It is from such misunderstanding of cultures, needs and good governance – as we will see later – that much development policy currently aims to bring small farmers into commerce and in the process reduce their numbers. But rather than making poor countries adopt rich country policies with incentives to reduce small farmer numbers, what if the primary outputs of farms was used as the basis of policy? In that case, national food security would come first, then sale of any surplus and then perhaps consideration of the additional costs of supporting rural emigrants if subsistence farming disappears. The figures are huge, and hence the issue of food insecurity combines with that of

social welfare to become the major concern of informed governments in poor countries.

IFAD puts the numbers of small farms at about 500 million supporting and supported by about two billion persons. That's two billion small farmers – one-third of the world – most of whom are feeding themselves, some of whom produce a surplus. To neglect this group is a major deficiency of policy in food and agriculture. To actively encourage their migration to megacities so that less-economic broadacre farming can be introduced is irresponsible. Yes, it is true that what in rich countries is the most economic – the most efficient use of available resources – is broadacre farming. But in populous poor countries, labor is valued differently and oil-based non-self replacing power (tractors in place of buffalo for example) is costed differently. To take one example: small farmers often pick insect pests off plants before they breed up to major infestations, while broadacre farming relies on chemical sprays and equipment. These differences are discussed more later, for now it is enough to know that small farms are more efficient in poor countries and to remember that that is where most of the world lives.

Notwithstanding these facts, most food and agricultural policy in poor countries assumes a commercial model. This is understandable and so far as it goes justifiable, since the above figures imply that up to two-thirds of the world's population is fed from commercial farms. If only ten percent of small farmers are commercial, then ten percent of that 33 percent of humanity that is small farmers is only 3.3 percent in world population terms. To this we can add the food produced for the other four billion or 66 percent of humanity to arrive at about 70 percent of world food being produced

commercially. But anyone informed of how world food works would question such a calculation.

Even if this reasoning was sound, which it is not, I would argue that 30-odd percent of food production warrants a specific policy focus (in fact it is more like 70 percent in the poor countries themselves). Yet such non-commercial small farmers are largely forgotten. Why? Because those who influence the policy live in that minority world of food exports, food surpluses and internationally traded food. From that blinkered minority world situation, it is imagined that the rest of the world is or can be the same; the logic used for this delusion is the same as that which claims one can raise the standard of living of all in the world to equal that of Switzerland by assuming unlimited resources and infinitely accommodating ecologies.

I have said that the reasoning is unsound, which I must now explain. Rather than the arithmetic being based on apparent food production, it needs to be balanced by food consumption. Put simply, if the 90 percent of small farmers constituting some 1.8 billion people who at present are largely able to feed themselves from their own rented, squatted or owned plot of land were moved out of food production to allow commercial broad-acre agriculture to take over, then there will be nearly 1.8 billion more consumers. It might seem that this is the same calculation, but it is not, because we know that such displaced peoples migrate to cities where delivery and distribution of food introduces wastage, probably of the order of 25 percent. Whether it is 20 or 25 percent is incidental to our argument, for whatever it is, it is an incremental requirement for food production. To contemplate a policy that advocates or assumes such movement off small farms is to assume

increases in agricultural productivity that have not yet proven to be managerially possible from broad acre farming.

In reality, the situation is even worse. It is not just an additional 25 percent of food production that would be required, because our human numbers continue to rise faster than ever before. IFAD takes UN figures to highlight that our 2050 numbers will be 50 percent higher than today. As most of the population growth is now in cities, we should add the city-costs to indicate that up to another 75 percent of additional food is needed in this time frame. Add our earlier 25 percent from displaced small farmers back into the equation and we have a round estimate of needing twice as much food. This type of calculation does not convince me but the common outcome from various approaches seems to give this answer. In this insecure scenario, food becomes an extremely valuable commodity.

False Security

Policies for food are foundational to social and national security. They need not rely only on human rights though that should be enough in a moral world. Such a foundation must be rock solid. Current policies that assume the disappearance of small farmers and even encourage hastening their disappearance are, on the other hand, built on the shifting sands of theoretical models. In the culture that influences such global policy, most children learn a simple metaphor for their later edification about the wise man who 'builds on the rock and not upon the sand'. In that language one can only describe policies that ignore or seek the demise of small farmers as foolish.

Fools are treated unkindly by history, if they are noted at all. In an era of headless leadership under the guise of

democracy, the informed are hard-pressed to influence organizations with entrenched worldviews. The university-multinational-development agency-NGO nexus, even with the best of intent, limits objective reflection. For example; shared programs, shared projects and shared approaches are touted as efficiency gains in aid administration, yet such gains are never realized as no one agency, let alone a person, is responsible to deliver the overall outcome. If no one is responsible, no one cares. This may be smart for survival of an organization and those in it, but it foolish development. It is foolish to argue for sustainable institutions under such conditions – they would be better wound-up periodically to reduce entrenched views and self-interest. Equally foolish is the assumption that small farmer agriculture is inherently ‘low-tech’ and unchanging.

I offered a small example above about small farmers being able to pick pests from their plants rather than need capital for equipment and chemicals. Let me offer another example. In ‘Thai Agriculture’, I described the traditional Thai system of rice production based on the unique ‘muang fai’ irrigation and governance systems that until about 1932 continued to inform cultural understandings of good government. When I wrote that word ‘traditional’, I assumed that it would be understood to mean what had been done for some time – a millennia in that case of one of the world’s few sustainable agricultural systems. However, reader feedback taught me that the term ‘traditional’ in some development circles is interpreted to mean unchanging insular systems. Nothing could be further from the truth! The ‘muang fai’ system was a dynamic learning and society-wide approach. It and other ‘traditional’ systems absorbed whatever new ideas came their way with travelers, migration, local innovation and fortuitous occurrences.

As living systems, traditional systems evolved as they tried new options and accepted those that met the criteria of the culture, such as reliability, labor-efficiency and risk-mitigation. These same criteria define agricultural science, which tests innovations against desired food and social outcomes. My colleagues often bemoan that now the test is against urban societal whims, such as belief-based 'organic' approaches. My university colocateur in the senior retirees room, David Smith observed such an instance in a recent Quadrant article where such urban ignorance led to reduced food production in Africa. In that instance, phosphate fertilizer that is essential to most of the world's agriculture was withheld on the grounds that it was not 'organic'. The 'traditional' agricultural system would have organically added phosphate fertilizer if it was accessible, for it was a living learning system now relying on modern high-phosphate-demand crops - and so the small farmers are left to starve. But wait - many actually survive for they are resilient, they bath in solutions to biological problems. Surely we should not allow that human attribute to be lightly thrown away by intellectual babes in cozy city offices.

Office-based plans based on current development theory and agency strategies can seduce agency staff into project thinking without reference to reality. They believe in what they are doing. But I have seen too much damage done by uninformed do-gooders to trust any such belief system, any ideology, any economic theory, any religion of development. I have been at the table when true believers selectively present 'information' in support of their worldview, and then later ask 'their' consultant to orient the evaluation report to the dogma so that their 'knowledge' can be passed on. 'They know not what they do' is not an appropriate justification for forgiveness when lives are lost and shortened by such foolishness. With Eliot I wonder 'where is the

wisdom we have lost in knowledge? Where is the knowledge we have lost in information?’ Would that my erstwhile colleagues in the development agencies could change their tune and see Banjo’s ‘vision splendid’ of a wholly integrated picture of survival food security involving all farmers, small and large.

Where Did We Go Wrong?

Now with nothing to lose from honesty, I pen my plea for an informed integrated vision of small farmers. I may be even bolder and discuss our ignoring of survival food policy and small farmers as akin to criminal neglect. In that case, one might ask ‘at whose feet should we lay this crime – the crime of allowing millions to die, millions more to die young, millions to lead intellectually and physically stunted lives?’ One might defend the neglect on the basis of ignorance or naivety, but that is only a technicality that reduces the punishment – it reduces the crime to manslaughter or second-degree murder. Blame remains, but may be cleverly avoided, especially when we consider that the accused are privileged and educated persons, governments of rich countries and international agencies. But these are not the real culprits, they are simply agents – agents of our rich societies.

Thus the crime must be laid at the feet of all of us – the scientists who have developed the techniques to solve many problems but allowed political barriers to forestall their use; the blinkered belief-based trade economists who have forgotten their discipline’s intellectually embracing foundations; development banks preferring large construction loans over food security to dispense burgeoning deposits; the public throwing money at natural disasters and forgetting the barriers placed on their victims’ lives by biased

trade, migration and development agencies, the well-meaning but ill-informed NGOs, and the rest of us. With this crime laid too at my feet, I stand ashamed of my profession, of allowing our informed efforts to be thwarted by transient political neophytes – and of my hypocritical culture. And so rather than bother with today's puerile debates of today's trivialized news, I stand with Luther-like resolve by my call for informed responsible survival-food security policy that supports small farmers, for all of our continued well-beings.

This is an issue greater than the financial crisis, greater than ethnic and religious differences and beyond the current crop of culprits to solve. We can begin by opening minds to what has been lost in the rush for action and information in place of reflection and knowledge. To do this we need to reconsider the very lens through which we evaluate development assistance and progress – economics.

A Short Re-view of Economics

When we reflect on recent experience with our current interpretations of economics as they affect food security and small farmers, we quickly come back to how little we really know. It seems that most of us assume that we understand the economic arguments that populate our media. But do we really? Taking an economics course, or even an undergraduate degree today is no guarantee of understanding the field beyond some principles, or more likely techniques. Even then, the focus is on the financial aspects of economics as they affect domestic issues in wealthy countries, and they are usually limited to one's own country. Such a rote understanding is insufficient for interpretation of values in non-monetized situations, where human behavior is culturally different from Western mores or where historic events color current interpretations of

policy initiatives. Yet, the science of economics in its complete form includes all these and more, as a field that links psychology, philosophy, history, anthropology, social science and technology.

So where do we find ourselves today in the light of recent financial debacles and the effect that this truncated version of economics has had on our comprehension of other cultures? The financial crisis provides a convenient case study of what has been lost or forgotten. The various intellectual felons paraded across journals may all be seen as proxies for fundamental greed and selfishness. This should not surprise us for we once included control through regulation of this socially unproductive aspect of human nature in our economic systems. Whether it is greed for votes, for profit or for pleasure, the outcome is the same: if unregulated, we take to excess and induce crises.

Take to excess is what we did in recent years. Greed for political influence and governmental popularity removed checks from the rational decisions of speculators and amazingly led to governments guaranteeing bankrupt lenders. Thus protected they made further risky loans. Aggregations of such marginal 'assets' into speculative investment products raised the house of cards from billions to trillions. When the cards fell, the resulting anger seemed also driven by greed in the sophisticated guise of passive investors feeling wronged. But we were all in on the game, even if only through taking unearned income as interest and dividends from companies engaged in no productive activity at which we chose not to look too closely as long as the returns held up.

This is all easy to say after the event. Likewise it is easy to blame economists for their lack of foresight. But these

include the economists introduced above – partial educated economists, as well as informed and intelligent economists duped by the game. It is not simply a matter of failing to predict a ‘bubble’, it is mistaking speculation for production. So when unemployment rose and borrowers stopped repaying debts, banks sought protection – and eventually, it was provided at the cost of future production. While we may grizzle about greed and bitch about bailouts, we have all been party to it. And there is more to come for we have bandaged the infected wounds without treating them, and so created a later and deeper malaise.

I find it curious that this trauma to capitalism comes soon after the demise of communism. Presumably this is the reason that some commentators see this as the beginning of the end of capitalism. It isn’t, and for good reason. Capitalism, when well managed can account for these nasty aspects of our nature by entrusting regulation to government or immutable agencies that guard like watchdogs against intrusions of our baseness – it has worked well like that. But when we starved and poisoned those watchdogs, we allowed our animal natures free reign to pillage the system until as in all post-conflict situations, we sifted through the ashes in sackcloth in an attempt to impress on our memories the need for future vigilance. In such moments, we catch glimpses of the benefits of ensuring equitable access to common human needs.

Common Needs

Our common biological needs like food, water and air, and common sensual, emotional, intellectual, and spiritual needs must ipso facto be accommodated in any successful social system. And capitalism has proved it can do this better than ideologies that ignore our egotistical and grasping

tendencies. We do not naturally share, and if we do it is not far beyond the family or clan. So we invent markets.

Market systems exist as an outcome of human nature – both its good and bad aspects. Adam Smith's 'economics goods' have become common parlance, especially with the commoditization of essential, luxury and intangible assets. A moral philosopher economist, Smith also noted 'economic bads', but in recent times these have been hidden in small font footnotes and assumptions in the same way as 'collateral damage' in the pursuit of a larger target. Even money – an otherwise worthless commodity – is vested with a goodness that makes it sought after for its own benefit. It is neither good nor evil, though grasping for it can be wrong. This is why Western culture regulated both individuals and social systems.

That system relies on management of a fine line, and one from which it seems society is destined to waver. We encourage animal greed to stimulate demand for more, which is obtained by working harder to earn more money, which in combination with our consumption choices is systematically massaged to boost our egos. To stop us getting out of control we agree to some social regulation, taxation to fund common goods and punishment for excesses. It is a system that by and large works. But it is not a system of free markets – we constantly invoke national interest and other high-minded ideals as justifications for interfering with markets. Likewise when we get it right, we ensure continued production of essential needs and in all cases align credit to risk.

So why, in precarious poor nations, do we promote the risky free markets and credit for such an essential substance as the basic food needed to survive? At home, we secure our food

supply, while for poor and marginalized countries we advocate selling ahead of eating. At home, we have now fallen into the folly of unproductive credit and are only now counting the cost, yet we still advocate credit to non-commercial small farmers in poor countries. We must face the fact that it is not just an honest mistake, but that its protagonists are either promoting informed exploitation on a par with the slave trade or are very poorly informed. To do otherwise is to form part of repetitive chatter of half-educated economists in the ranks of government and development agencies. I am reminded of the retired senior agricultural expert observing his successors' lack of agricultural knowledge and experience on-farm and in science as only being surpassed by their 'arrogance of knowing best from the comfort of untested ideologies'. Grave words reserved as they should be for grievous wrongs.

Uncommonsense

Of course, the loneliness of thinking fails to compete with the charm of chatter among the masses – but those with responsible roles should be different. It is they who must care for society's wellbeing and uphold its higher values. Rather than glibly follow an agency 'plan' or current development theory, the economist would be expected to test options against the science's deep and broad knowledge base. And this would show that the recent iterations of capitalism are not its best expression. But the development agency that requires this economist to measure his success in rates of so-called 'economic return' only defined in short-term financial gains is forced to forget human values.

Those who measure success by wealth reduce other human values – this does not only mean balancing merchant values

by such devices as Hok Lok Siew by adding power and longevity to wealth, but deep common values that arise after the most basic needs of reproduction and avoidance of death. It is in this realm of culture that we find the worldviews that are contexts for capitalism. For example, neuro-economist Necati Aydin's Harvard Well-being Program noted that a Muslim perspective of human needs and foibles from such scholars as Gazhaali, Rumi and Nursi began with understanding human nature. After that, workable social systems could be evolved, the study of which is economics.

Whether it's Islam or any other deep consideration of human nature, the danger has often been flagged of overreliance on the material world to the exclusion of the psychological or spiritual. Thus Aydin relates the dual crises in finance and happiness in capitalist countries to poor self-understanding. Put simply, reducing all discussions to money has biased actions and reduced happiness. My friend Charan and I write about Gross Domestic Happiness as an alternative way of thinking about development and as an alternative to filling the inner hunger with non-sustaining consumption in Asia. We are mostly ignored, except by the older quartile of professionals, those with knowledge and experience – for they have seen the fallout of one-sided economics. A society reliant on material symbols of worth and frenetic searching for new products and activities as diversions from their omnipresent hunger is doomed to fail, one way or the other.

There is no need not follow the Muslim or Buddhist worldviews to understand ourselves. But we will benefit from a better understanding of human nature. The West claims ancient Greece as its heritage yet reject its insights; it reveres psychology as a means of remedying angst yet excludes Jung's 'collective unconscious'; it lauds its secular values as above those of other cultures yet fails to instruct its

children of their own culture and history. It is little wonder that many feel that an empire is dying. When the once most credible voice in financial matters, Alan Greenspan, observes that unbridled greed wrought the current mess, do we take heed; no, we shore up the mess and strive to return to business based on greed. The excision of human nature from modern economics is but one manifestation of the lack of depth in development agency analyses that can prejudice food security in precarious countries. If this truncated economics has led to a crisis in its heartland, why add to past wrongs by continuing its use in other lands?

Re-Integrating Economics

To insist that psychology underpins economics is not going too far, and it is certainly much more informative than placing financial theory at the heart of economics. We do well to reconsider Keynes neglected lines in his *General Theory of Employment, Interest and Money*: ‘Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than mathematical expectations, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as the result of animal spirits – a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities.’ So how could we have possibly imagined that inexperienced, partially-educated, desk-bound planners could conceive what is in the interests of foreign countries and global food needs let alone small farmers in poor countries?

The situation in poor countries is not one of well-nourished people with little to do or being too lazy to do it. It may be better characterized as capability limited by factors beyond individuals' control. Eppig and colleagues in their recent Proceedings of the Royal Society (UK) article have shown that poor basic health conditions reduce intellectual capacity. We have long known this intuitively, just as we know that inadequate nutrition limits intellectual development. Such compromised lives are not amenable to behavioral theories based on the psychology of the well fed. Add to this limitation that of poorly formed skeletons and musculature from malnourishment and the assumed labor outputs of many theories break down. International development professionals were confronted with such matters with the advent of large-scale HIV infection undermining tidy economic development models simply because affected people had no strength for routine work or new innovations. The ivory tower remains replete with brioche – but today the tower is found less in the academies than in the insulated international development agencies, governments and even well-meaning NGOs. Economic development theory, done well, assesses its basis on human behavior by considering if its assumptions are valid. For many of the marginal development situations, assumptions of uniform behavior regardless of health, nutrition and history prove to be invalid. And invalid assumptions produce poor economic advice.

Experience of the outcomes of such advice explains skepticism about economic plans. Worse, the credibility of economic advice to poor countries has been badly damaged and recent resorts to power to enforce models only make it worse. Western delight in propaganda against Chinese economic management systems further puts off consideration of flaws in its own systems. And so suffering is deepened. Unless

acknowledgement of basic human nature is reunited with economics – for the West and for developing countries – it will limp along languishing in lightless circular cloisters populated by subjective schools that examine others only through their own filter of dogma.

It is not a matter of substituting a foreign system for that of the West. But there is merit in, for example, Islamic modes of risk and profit sharing and lease-based modes of finance within capitalist models. Such approaches allow economics to again see the variations in human behavior in its unchecked excesses and propensity to crisis. They would be founded on knowledge that we all will take what we can when unconstrained by cultural mores or fears of punishment, and that once begun, an exponential increase in such anti-social behavior will rapidly emerge accompanied by sophisticated rationalizations. Economics in its complete form includes all these and more, and third world needs for a re-integrated economics are now congruent with first world needs for the same.

I cannot conceive of economics separated from human behavior; nor can I conceive it as separated from the need for some market regulation. Rational decision-making to maximize profits and consumption in a marketplace is a starting point; but what is rational for the individual may be positively anti-social. This is sufficient reason for regulating markets. But the other reason is that the human animal does not always act rationally, and hence ethological understanding must inform policy-makers and legislators of areas where it needs to be tethered or herded to better pastures, even if it thinks the grass looks greener elsewhere. Some will prefer to call this moral restraint – others will call it sound economic policy. Whatever it is called, it is essential for any sensible discussion about food security.

For me, it is easy to say that accumulation of wealth without contributing to production is robbing the poor. I have seen it in tens of countries. In the West, we do it every day when we buy products below any price we can conceive as fair. Even fair-trade with its motherhood cachet serves mainly to assuage our unspoken guilt – especially when the supposed beneficial projects to produce non-essential products such as coffee entice producers into debt and away from family food production. Such fair trade remains caught up in the fantasy of free trade. Until it can include free movement of the factors of economic production – land, labor, capital and technology – without control by well-meaning residents in rich enclaves, it is not free trade. This is how small farmers and food-deficit households remain victims of the wealthy's blindness, even when they seek to do good; this is how rich countries strip poor country citizens of their rights.

Rights to Food

Rights have become a catch-cry that covers so much that is wrong in food policies. A 'right' to food is indeed a right in the way these matters are discussed, but it is not the same as a right to a free press or gender equity. Food is so much more of a right as to render such other rights as desirables rather than rights. And yet, even the right of all to food is not absolute when there is a shortage – then certain groups may be seen to have more rights, although the theory is never proved as such fights for survival lead to might taking the absolute right. Despite its flaws, rights as the popular paradigm of the present age seems to have replaced past ubiquitous aspirations that Westerners referred to as the golden rule with its deeper echoes of compassion for others, other beings and oneself.

In its Eastern context, the golden rule has often been transmitted in such forms as 'don't do to others what you wouldn't like done to yourself', and has been supported by integrated lessons about compassion, equanimity and delight in others good fortune. The distinction between this type of social action related to food and those based on individual rights is highlighted by policy reactions in richer nations. Thus rich country assumptions that fair trade, equitable rewards and so on cannot be offered to poor countries without huge political backlashes at home in the rich democracy, do not even allow consideration of any golden rule. Even rights rhetoric is invoked to cover up self-interest. So, for example, financial risk analyses of the threats to rich nations from hunger-induced migration have spawned current political responses to 'illegal' immigration and an accompanying passing interest in enhanced food production in poor countries.

Benefit analyses are in effect conducted to decide what it is worth to a rich nation to feed a starving person in another country. Fraught with varying views about real and perceived threats, the normal response for a rich democratic country is to act in accord with public fears of such threats. And from such analyses is determined the targets and amounts for food aid. Cynical? Of course – but not so distant from the essence of much food policy. It is as if the sums become too hard and so an emotional response to self-preservation informs actions more than does reason. Such observations are part of the wide realm of economics including its free traders, which is why it should not be left to acolytes.

Un-Free Food Trade

Economic interpretations of human behavior aim to inform

policy by aligning moral and financial interests and then defining levels of social tolerance. Where tolerance might conflict with some other 'good', means of influencing the system are determined as a role for government through policy. Manipulative and undemocratic? Only if one defines such terms narrowly, for the greater good is more easily determined by a sound government than any individual. This enables difficult questions to be addressed, such as; does the moral imperative to stop someone dying from malnutrition extend to providing health care, rising living standards, climate-controlled housing, cars and so on up to the same standard of living that Westerners enjoy? The 'moral imperative' moves along this continuum, necessarily changing with circumstances. At present, our age of conflict between the ideals of human rights and self-interest leads governments in rich countries to opt for limited food and aid responses, highly restricted immigration and maintenance of the existing trade imbalances.

Free trade may appear to offer a means of redressing unfair relationships between nations, but in fact is a not a free and open trade in goods, labor and capital as its name might imply. Let me repeat this important point: in its WTO guise free trade probably favors richer nations in strict trade terms and certainly does if free movement of labor is precluded. But that is not practical in the present world. Rather than automatically bemoaning limited vision and compromised civility, it is productive to consider how else the free trade principles have been diluted. In the case of food, the near ubiquitous intervention by government, or large entities that can manipulate supply or demand and hence prices, is at odds with free trade principles. Why is this so?

The answer is in the evidence; a completely free trade in food does not efficiently optimize itself on any basis except short-

term profit. Yet the fundamentals of economics again are instructive – value is not fixed in monetary terms. If food is in short supply in a rich country – an unlikely circumstance as most rich countries have or control agricultural hinterlands – prices rise and purchase choices are made. Free trade under this circumstance would have food from poor countries exported to rich ones, such as occurred in misguided UK grain policies for Ireland through the 1850s potato famine. To minimize such adverse outcomes, optimizing societal good requires selective government intervention to mollify the excesses of free trade in food.

As food is now a product from a shop for the majority of the world, the link between production and consumption is largely forgotten. Hence inadequate food policy is hardly a political issue until shortages arise. Linking food producers to consumers would allow the majority of producers, who are small farmers, to enter the consciousness of urban purchasers. The argument is similar to that gaining currency for industrial economics where factory to user analyses are complementing traditional shortcuts based on sales to retailers or other intermediaries. Such ‘organizational learning’ is hardly revolutionary yet is a powerful means of awakening complacent researchers and other service providers while also enhancing market efficiencies. In global food production, an holistic understanding of food necessarily brings the focus onto small farmers as the world’s main producers, and as critical to national wellbeing and as deserving of effective support services such as focused research. But this is difficult to appreciate if food is just viewed as a commodity.

Food as a Commodity

It is normal for most realistic parties from the Western world

to assume that markets work most of the time for most commodities. That is because markets serve those with purchasing power. I find this morally acceptable and consistent with human behavior for non-essential aspects of life. However, when it comes to that proportion of food that is essential to survival, markets and lack of experience confuses Western understanding. That is why food security is watered down from a survival definition to one of constant ideal nutrition, food preferences and even out of season produce. Food management and small farmers in food-deficit countries are thus seldom considered central to such commodity market discussions. If food is a commodity, it is a very strategic one, like missiles.

Lack of awareness of the issue is not a bias as much as it is a worldview – a belief that all things that humans need, desire and may be made interested in can be considered as commodities. It is at the heart of what will be the next food crisis. I expect that we will see a real crisis in food, a crisis of greater proportions than the misunderstood crises of climate and finances that have overtaken the more serious warning of 2007-8 food crisis. The omissions that creep in automatically with the commodity worldview can be illustrated from the 2009 FAO report on 'The State of Agricultural Commodity Markets'. Its fundamental worldview is market-oriented, so much so that it sees the highest food prices of 30 years and the pushing of an additional 115 million people into chronic hunger as regrettable but mollified by the financial crisis and recession. Empathy has long vanished from these analyses. This mindset expected high prices would cause farmers to increase production, because that is what they thought basic economics said. When it failed, this was explained as being due to small farmers not increasing production because price rises did not flow onto them.

Their surprising conclusion is that it is necessary to ramp up policies for open markets and credit to bring small farmers into the global market system. Market failures between the small farmer and the city market, particularly in relation to transaction costs – official, quasi-official and unofficial – can easily exceed logistic costs if complete value chain analyses are conducted. The glib response to do more of the same is acceptable to international development agencies simply because it follows the long-held party line. Repeating the party's mantra reinforces the sense of belonging to that international community. By a quirk of demography, it is now also acceptable to urban experts since the new victims of food scarcity are the urban poor. Thus the small farmer is doubly misunderstood – first by the assumption that credit-based market systems will improve his lot if he buys out neighbors, and second because imported food assistance can now be reoriented to cities. This incidentally suits incumbent powers in poor countries whose veneer of democracy relies mostly on urban dwellers, and whom they must appease to maintain stability. Partial understandings have the propensity to upset integrated systems, of which food is much more biologically and socially complex than the infrastructural development that attracts the major agencies. Thus fragmented well-meaning ideals of development foment issues that work against the fundamentals of development.

We have the intellectual and managerial capacity to do much better. Nevertheless, I expect that the first repost to my description of this serious matter will be development agencies pointing out that their longer-term vision of food production implies consideration of small farmers. However, that consideration is within the widespread assumption that enhanced access to credit will allow increased investment in

food production, and from that, increased output. This is logical in commercial circumstances – but it is not the way that the majority of the world’s food producers will respond. Regarding individual foods as commodities thus misses the majority of producers and consumers; it also produces third-party price speculation.

Commoditization Leads to Speculation

Speculation is part of market life, neither good nor bad in itself. It is a widely accepted means of reducing price risk in commodity exchange markets. It plays a part in allowing farmers, processors and traders to hedge against price risks by increasing market liquidity. This is well and good for those who form part of the market and information exchange, but for the majority of producers on small farms, risk management takes a completely different form. Small farmers plant diverse crops over a range of times, share work and rewards with neighbors and do not consider new technologies or credit unless risks can be shown to be low. Put simply, they have too much to lose, as it is their survival – not their income – that is at risk. Commodity markets that are said to set fair prices via speculators’ funds do not feature at all in such risk management decisions. Add to that thought, the fact that less than 10 percent of world food is traded across borders and it is clear that the majority of food and food producers have no relationship with speculative commodity markets.

Earlier it was observed that Western-influenced policy-makers including international agencies are oriented by their personal experience and training to the traded proportion of food and hence to large producers. This leads to bland statements to the effect that, after such debacles as the 2007-8 food-price crisis, ‘speculation may not always serve markets

or producers well when it produces sudden and illogical price fluctuations'. One could comment on many facets of such FAO statements. For example, to respond with knee-jerk market regulation is simply to assist those who are 'in the market', which increasing means speculators not farmers. As we shall see elsewhere, current global policies of free food trade and development oriented to that end looks like an experiment of theoretical economics played out on the small farmers and now the urban poor. We should have learned more than this from our huge experience in food production and consumption.

Lessons of the Recent Past

The Green Revolution that increased yields and harvest areas worked brilliantly until about 1972 when the usual variations in climate reduced production. Oil prices quadrupled around the same time, which hampered Green Revolution technologies that relied on oil for such products as tractors, pesticides, herbicides and nitrogen fertilizers. Five million people are estimated to have died from that crisis. Of course, many lessons can be drawn from the experience, but it seems that these have not included adequate creation of managed food reserves, national food security plans or recognition of the role of the majority of producers, small farmers. The lessons that have been extracted strangely emphasize open trade of food and market pricing. Simple supply and demand diagrams pervade the official documents that discuss price aberrations as caused by controlled rather than free markets. The main lesson – that most of the world's farmers feed their own families first and that governments confronted with a food crisis will feed their people first before exporting – seems to be studiously ignored.

Without the benefit of using knowledge from experience, we are all part of a grand experimental race for survival, which if food supply becomes critically short the food-surplus nations, wealthy nations and wealthy urban persons will win. Subsistence farmers will continue as always of course, but will be unnoticed until food is currency. It is this current sheltered worldview that marginalizes the world's small farmers – not the land they till, nor their lack of credit. For that majority who first feed their families a food crisis would probably not matter, except that the worldview promotes their demise. Why not then focus on the majority of producers and those consumers at-risk – which means mainly small farmers and urban poor in less developed countries? A more important lesson that could have been learned is that, contrary to what was predicted, food price rises that penalize poor urban consumers do not benefit small farmers.

Prices for those small farmers who sell some surplus food, and for most large farmers also, have declined in real terms for the last 50 years. It is a wonder that many kept producing more than they needed for home and local use – especially if we only use the conventional tools of cut-down economics that are used in other international commentaries. According to that worldview, price declines lead to reduced production, which has not occurred. Some of the reasons for this are readily explained by economics in its fuller guise that recognizes the psychology of farmers and the lack of choices open to them. In any case, the long period of low prices prevented investment in the new agricultural technologies that could have allowed production increases. The model works in general for broadacre agriculture, but not for small farmers who operate independent of international markets.

Faced with this neglected information, it takes a special kind of mind to leap over logic to suggest that small farmers need better access to credit in order to invest and benefit from higher prices, or to move to bio-fuel and cash crops in order to buy the supposedly cheaper food that is said to magically appear. Yes, such things are really said and seriously proposed! A grim specter hovers over these ideas like the 'ghost of ideas past'. Take for example, a case study from the 1980s used by Bruntland in 'Our Common Future' in which small African farmers were enticed to replace subsistence food crops with cotton that was to provide income sufficient to buy food with some money left over for development. When the world price of cotton dropped and small farmers unconnected to moneyed interests found no markets for their cotton, they and their families starved.

Life and Death Risks

Broad thinking readers will see that this is not an argument against commercial development. It is an argument against partial views and uninformed policy. Credit may be useful, but certainly not before very many other public investments are in place, including transport services, market infrastructure and education. The word 'before' is important – credit is an undue risk until such developments are in place. This means that credit is not a part of a development 'package' that can be 'delivered' all at one time; yet that is what is still promoted by the new crop of theorists. To put it into context, the risks to the small farmer are far higher than to a middle-class development adviser losing his house, car and pension – the small farmer faces life and death risks.

How can this have been overlooked? One response is that viewing an essential component of life like basic food essential to survival as a commodity like a car or soap

powder distracts intelligent analysts from reality. Commodity analysts consider that rapid transmission of price signals is an indication of market efficiency. This is a field of economics in itself and is useful for what it talks about – market efficiencies measured in terms of price. But it is not a field equipped to deal with efficiencies measured in terms of guaranteed family food availability having a value above production and market efficiencies. Similarly, it is difficult to expect even the best refinements of Western economic analysis to accommodate the nuances of small farm production in other cultures, with priorities of subsistence before sales, and sales being regarded as windfall income rather than a business return. FAO’s document expects routine economic approaches to do so, despite its own case studies showing the bias towards subsistence even when markets exist, as indicated in the table.

Country	% Households Growing Maize	% Growing Households Selling	% Households That Sold Most Maize
Kenya	98	36	20
Zambia	80	30	
Mozambique			5
- Central	90	24	
- South	59	4	

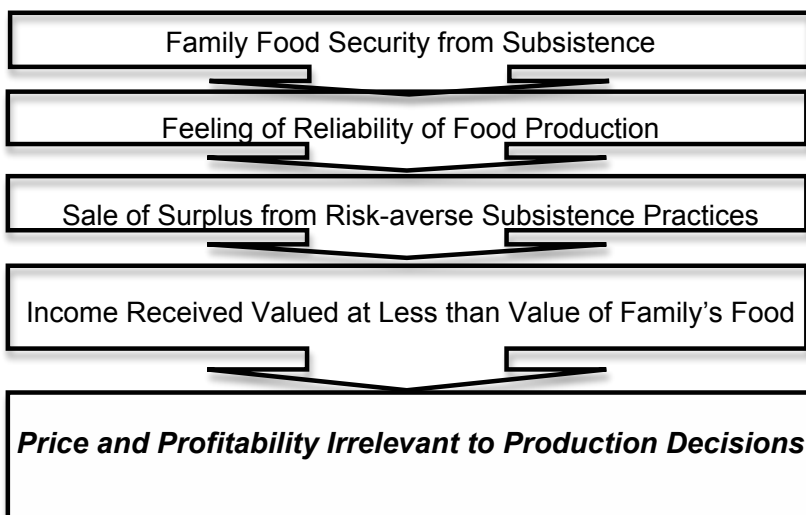
Put simply, there are many times more farmers than there are sellers, and even more than there are large volume commercial sellers, which are the type best able to be considered by the common economic analyses. The small farmers are not usually part of the trading-commodity-exchange-silos-millers-supermarket chains or transnational food firms. Some are and more can be, but not the majority. It is no longer tenable to consider subsistence farmers as part of a development continuum from pre-commercial to semi-commercial to commercial as if they are primitives awaiting the benefits of civilization. The real benefits of subsistence in both feeding an extended family and in reducing overall

social welfare costs in poor countries has yet to find its place in economic analyses. Such unanticipated outcomes may be akin to analysts' concerns that supply-demand relationships in situations of rapid urbanization in populous countries are also not working as envisaged.

Supply and Demand

Fundamental to our understanding of human behavior, supply and demand is an axiom of basic economics. Not only subjectively observed, it has been empirically tested and is a valid basic tenet for further analytical methodologies. So when we find that the supply-demand equation does not appear to be working in food supply, we have a choice of either challenging millennia of human social understanding, or assessing whether we are measuring supply and demand appropriately. For example, a FAO review of 150 recent instances found that in 66 percent of cases food production increased when food prices increased – two-thirds is at best a trend and is certainly far from any significance on which a valid conclusion can be made for policy formulation.

One reason for the apparent breakdown in recent times is that while prices increased so did costs, thereby opening the routine argument that profitability rather than price is the appropriate supplier indicator. One expects that other agencies of the UN such as WFP could inform such theoretical analyses about human responses to absolute food shortages. They have observed first-hand that survival behavior subverts markets until managed food security creates conditions for the emergence of psychological security that food supply is reliable. Such an observation might express the basic formula of supply and demand for small farmers as something like the following diagram.



Such a conclusion – that price and profitability are irrelevant to subsistence farmers – may be simplistic. But it captures the essence that current food production policies have missed the main game, the players in which are small farmers.

Policy Approaches

Policy in general is limited to short time horizons; some cynics say that this results from election periods in influential countries. In any case, the visionary approaches of the Green Revolution are long gone and so it is hardly surprising that solutions proposed to the recent food price crisis demand more of the same approaches as in the recent past. 'It is clear', the logic seems to run, 'that we have not done enough, therefore we must redouble our efforts' and in the absence of deeper understanding this is translated into continuing and expanding existing programs. The alternative logic that past efforts failed to predict or forestall the food-price crisis offers some interesting and different perspectives.

When we look at the reactions to the crisis, we have another logic at work. We can clearly see an underlying concern for social stability when we look for a common pattern among such reactions as:

- India closing exports of essential rice (not what Western markets call Indian rice – Basmati sales continued as it is not an essential grain but a luxury product) except to its neighbor Bangladesh;
- Panic buying by poorly governed countries such as the Philippines, and
- Foreign assistance targeting urban consumers under ‘safety net’ rhetoric through such schemes as cash transfers and ‘food for work’ programs.

Why these reactions? Because if the people are hungry, especially in cities, the State is not stable – riots, violence, breakdown of law and order and migration result. Hunger feeds anarchy. This important theme is developed further in the next chapter, so let’s remove our economic blinkers and re-view the majority of the world’s farmers.

Foreign assistance under its diverse initiatives in the third bullet point above is delivered on the assumption of markets behaving in accordance with the same theory that produced the failure of the food-price crisis. Such assistance did not produce a supply response to increased prices and in fact fueled price inflation from enhanced urban spending power bidding up the prices of scarce food. Food aid may have been a more direct means of assistance and have sent the message of urban vulnerability more clearly to governments. India and China have shown us that they will confidently act contrary to the international political correctness of global free food markets. When criticized for blackballing this modern Anti-Club-of-Rome, their boyish delight in declaring loudly that the Emperor was naked would have cheered

Vespasian. For as we have seen he, like the Club of Rome and all informed leaders, knew that pragmatism comes before diplomacy when the people's food is not secure.

So while such international agencies as FAO think that 'the longer-term solution to this problem is to take measures to nurture various elements that will ensure that food markets function well and are competitive', the pragmatists are increasing food production. They know that the supply-demand function left to market forces works for non-essentials, and they also know that the basic food for healthy survival is too valuable to be let out of national control. That advocates of the market solution disagree has now been made irrelevant by the two most populous nations – more than one-third of the world – removing themselves from the free food trade experiment.

Of course, this is not to say India and China have the solution; the fact that the two countries have taken different approaches suggests in itself that there may be other models. But some fundamentals have emerged, such as; small farmers are critical and must be specifically recognized in policy, just as broadacre commercial farmers need their own specific policies. After that point, refinements advocated by free-marketeers may be better contextualized as means of enhancing national and local efficiencies, not as a global free market that includes basic food for survival. Securing sufficient food for survival is the first task – as it has always been, as is discussed further in the following chapter.

Chapter 3

Securing Enough Food to Survive

Rediscovering Food Security

If beauty is in the eye of the beholder, it might be thought that food security is in the gut of the eater. But it is more particularly in the mind of he whose food supply is threatened. It is a psychological security, a freedom from cares as the Latin 'securus' implies. The West saw insecurity demonstrated recently in runs on rice in US supermarkets. Why rice you ask. Only because the fear inherent in many urban societies causes strange interpretations when a 'crisis' is announced, and seemingly random news about possible rice shortages in pockets of Asia cause panic buying - in the US of all places. Food security is that sensitive. It can fuel panic, even global conflict and migration.

Most pundits dismiss such statements as Malthusian melodrama, but population and bad governance have shifted the formulae's quotient. As we bring real facts and new ideas to the table, rehashed leftovers from previous crises are no longer palatable, and if they ever did, no longer sustain. A realistic look at where food comes from is needed. And the simple sum equates to two billion small farmers, who in addition to feeding themselves, also produce surpluses that find their way onto local markets. This the alternative view of the world's major food markets. Those domestic markets plus food consumed on-farm constitute more than an estimated 70 percent of the world's food - a fact repeated through this book to ensure that we do not slip back into the delusion that we are discussing a major internationally

traded commodity. As we noted earlier, food is not just a commodity, and it is overwhelmingly eaten locally.

In 'Religion and Agriculture' I traced the fear of environmental catastrophe to our universal fear of death and implied that we allow such a fear to bias use of otherwise factual information. I could have gone further and observed that fear of death by environmental catastrophe is a sign of luxury, for a far more durable source of that death-fear for mankind has been the fear of not having enough to eat. It entertained early man in his oscillating reliance between hunting-and-gathering and settled agriculture. It continues to dominate the minds of a billion or so today. But if you are reading this book, you are very unlikely to be in that segment, as well as being quite alienated from the growing of plants and killing animals for food – and that separation is a very recent phenomenon. This is why history is a critical informant and foil to our short-lived self-centered perspectives, although we seem to have also deleted that from learning also.

Even a rapid scan of history tells us that the fear of famine has occupied learned men throughout chronicled time. Our routine resource for such discourse today is Malthus' 1798 and later tracts with his projections of geometric population increase outstripping farming's arithmetic rise in cultivated area. He focused on the exploited English colony of Ireland, and from his clergy-class manse defined food security as an ideal for everyone to have at least one meal each day that included roast meat and wine. However, as Lucretius observed – one man's meat is another man's poison. Or if you like – for such pithy sayings belie our recent heritage – there is more than one way to skin a cat, as large parts of vegetarian India have long shown us. A vegetarian diet is much easier to provide for ten billion persons in 2050 and is

easily calculated as possible even from today's farming systems.

I have only added vegetarianism to the argument for spice. In fact, I can't see how it is at all practical to promote vegetarianism unless enforced by a belief system, and it is certainly not the direction of global diets. Western diversionary magazines that claim a rise in vegetarianism conveniently omit rises in meat-consumption in developing countries that are multiples of any reductions resulting from fads in secure Western countries. But it does highlight how far from reality that anecdote-informed thought can be, even though it can influence international aid policy. It is as if the colonial 'white man's burden' with its assumption of knowing best has continued uninterrupted. If not, then it must simply be a desire to make the world in our own image. For the facts have often offended international development practice, and even our best intervention – the Green Revolution – required stimulus from outside our usual institutional approaches, in that case from the Rockefeller Foundation. Other external inputs have awakened us to earlier folly, even to the extent of causing famine.

Forgotten Food; Forgotten Famines

Famines, such as that of Bengal in 1943, were exacerbated by rising middle-class incomes that inflated food prices when supply was limited. This left the poorer strata of society unable to buy enough food. Nobel Laureate Amrita Sen highlighted such phenomena as infringements of economic 'entitlements', which may be seen as akin to human rights abuse. And as with rights, entitlements are difficult to enforce, especially in a market place, which is why food security is usually treated as a social policy. This is fine – to a point, but it has the usual boundaries of reductionist

thinking if left like that. Sen understands the wider picture, but it seems that those invoking his conceptual model forget that it is a concept to describe social behavior impinging in the individual's entitlements. A wider social need also related to food security makes it doubly important – that is, food insecurity produces ungovernable riots, which lead to more suffering.

This is not new, as the introduction to this book observes. Technologies may change but our nature has remained the same. All that seems to change is memory of suffering. Just as wars seem to recur once living memory of their pain has died, so essential measures for national security seem to peter out. The most apposite example is past insistence on efficient management of food stockpiles in the form of grain reserves as an essential part of food security. Recent decades have seen an erosion of such insistence with the rhetoric of efficient management switched to financial matters, which led to grain stockpiles being sold off to repay general debt. Food security under this new arrangement is to occur through 'free trade' sending appropriate 'market signals' to farmers. Even with a clear market signal, farmers need a season to produce food, which must mean that any complete economic evaluation of this approach would include an assumption of 'acceptable millions of persons who will die from starvation'. I have never seen such an analysis. It may exist and is rather like the 'acceptable collateral damage' approach that so offended the world in the past decade.

How did we stray so far from our experience? How did we forget maxims of social let alone individual survival? Until about 200 years ago, food security was synonymous with food self-sufficiency – a community produced for itself. This continues in parts of the world today – late comers to the UN talkfests such as Bhutan have taken pains to limit the

influence of naïve food trade policies. They are both wise and fortunate, for they can see the social costs of development theory played out in their neighbors' plights.

But it is not the Bhutans of the world that determine global trends, it is the West for want of a better term. The West rose to its current dominance from the industrial revolution, which created larger towns to which some rural folk migrated amidst huge upheavals to work in agro-industries – the wool and flour mills, food preservation and storage systems – which in turn stimulated economic growth. Some observe that the impact of the revolution has even been enhanced by subsequent wars and that our current worldviews are a product of post WWII reconstruction successes. Somewhere in these events, the intergenerational stories that maintain greatness in a society have been lost, and with global communication technologies it means that this deficient worldview is spread everywhere. This explains how otherwise competent professionals trained in the recent Western systems that cover half the world can openly advocate the demise of small farmers simply because that is what happened in the West. But the West has lost the traditions related to its own survival. It can survive at present because it commands resources from poorer countries, but if one even accepts such an inequitable hierarchy of nations, it is not possible to use the same model to develop those poor countries.

Fundamental Knowledge

Let's go back to consider traditional communities. They all maintain food reserves, roughly proportional to the incidence of droughts, wars or other vagaries of survival. The tradition flowed naturally into many national policies as a cultural given. It continues today, and explains why China

and India have consistently acted against development policy to their national benefit – their memories of starvation are very recent. Perhaps it is such observations that led the eleven drought-prone countries of the Southern African Development Community, without major donor support, to maintain a revolving food reserve from which countries may ‘borrow’ grain and ‘repay’ in grain in a later year.

If we are to be practical, we must treat governments as the essential units of food security management. So rather than ask how much food does the world need as the first question, we may better ask – how much food does a country need? Is it a simple sum of nutritionists’ calculations, or is it a least-cost ration formulation on a bulk scale similar to the formulae used by livestock nutritionists? This may sound a crass comparison, but in fact it points us to a practical solution. It is one that the West has followed in its own development. This is what was meant by early US dietary recommendations, which were styled as ‘nutritional problems in connection with national defense’ – food security as national security. British nutritional standards were developed from 1862 in the face of the mass urban starvation when the Lancashire cotton industry failed – they sought to determine, ‘the least cost per mortal for which food can be bought in such quantity and quality as will avert starvation’.

Least-cost ration formulation is built up from simple linear regression analyses to provide essential macro-nutrients and after that micro-nutrient requirements are checked. It is not an approach that begins with a perfect and tasty ration and aims to provide it regardless of cost, but of basing a decision on least-cost options. Taking this approach for national human food security would not be revolutionary, but it is mentioned here to balance dreams of fully balanced perfect

diets for persons in nations with little ability to approach such ideals. By taking this pragmatic approach, a nation may provide a basal diet to its population and, if necessary, make an informed request for assistance of specific deficient nutrients. This would be the 'bottom-up' 'safety-net' approach to what, in the current vacuum, is a 'top-down' application of technologies to provide relief to unnecessary suffering through such programs as genetic manipulation to include vitamin A in cereal grains. To be sure, the genetic manipulation is useful, as are many of that technology's applications, but the underlying need is for food security for survival and then remedying of debilitating nutritional deficiencies.

Pragmatic survival food security policy includes those sort of factors, and it also ensures that food producers are supported in their key role, and this means that small farmers must be seen as critical components of an economy. The approach is not new. It is 15 years since Joseph Hulse in his 'Science, Agriculture and Food Security' politely noted that 'governments seem reluctant to formulate comprehensive food security policies that take heed of changing demographic conditions, rising purchasing power and diversifying demand'. That was the language of the 90s – now there is another rhetoric of 'good governance' and 'rights'.

We can no longer blame governments alone, for they are often facsimiles of Western democratic ideals introduced without regard to underlying cultural and philosophical traditions, and staffed by an elite educated in a Western manner. As I write this through 2010, I am daily reminded of Thailand, which has been my intellectual laboratory; its tumbling house of 'democratic' cards has left a disoriented urban elite waking up to perhaps realize the importance of

the 70 percent of the population that feeds the nation's stomach and coffers alike. If one asks how did this situation arise it cannot simply be called governmental failure; we all must own up to having advised the creation of impractical and divisive systems. It looks like foreigners, including the elite of poor nations who have adopted foreign mindsets, are of limited value in devising detailed social action.

To put it in more palatable terminology, the development community learns from its mistakes like every profession. In the process of learning it encounters entrenched views and even beliefs that take time to expose to the light of reality. In the field that has too long been labeled agricultural and natural resource development in major agencies, the centrality of basic food security for healthy survival, at national down to local level is slowly being realized. It is not a new idea – in fact it is the oldest social idea in the world, but the modern development fraternity seem to know little of such history because they have matured in the post-WWII paradise with no experience of food insecurity. When the spoilt protected princess discovered how her gardeners lived, it was just a curiosity; basic food security for healthy survival must be more than a curiosity to aid's nobility. It is a very serious matter, as the recent food crisis has demonstrated.

Food Crises and Foreign Aid

News of the food-price crisis of 2007-8 paled with the advent of the less serious financial crisis. Its legacy is calls for new institutions, such as occurred from previous crises that spawned IFAD and CGIAR. Fortunately no new superstructure has been licensed to mine the imaginary new donor commitments to food problems. In fact the new financial commitments themselves have been deftly

redefined downwards by double counting and little is now expected to change in the world of international agencies.

Notwithstanding this indicting scenario, the financial crisis may have done a service to governments of poorer countries. Whoever it was that observed that foreign funds did not address the central issues because, 'its policy and governance suited to our culture and conditions that we need', had identified the nexus between the responsible government and the influence of donors. Paved with good intentions, the foreign development path neglects national government emphases on the most basic levels of survival food security and actively discourages consideration of national food self-sufficiency.

The informed see such rhetoric as the Philippines' plan to be self-sufficient as technical feasible yet politically elusive. Yet, their more populous archipelagic neighbour Indonesia has surprised analysts with its recent rise towards rice self-sufficiency. So rather than respond with amusement to such initiatives as Senegal's 'Great Offensive for Food and Abundance' to move toward self-sufficiency in essential foods, we may better join those observers who are in fact bemused by what they see as a glimpse of a future. When the reflective practitioner muses, he is unlikely to readily side with the theoretical solution of free trade in any essential commodity and is likely to view the examples of India and China as of rising relevance.

As China and India increasingly sweeten food debates, routine international agency views that self-sufficiency will undermine trust in trade are heard as sour grapes. It is then a short step for those whose teeth are set on edge to label the farming of foreign soil as land grabs by anti-traders disrespectful of sovereignty. Yet agencies' own analyses

conclude that the first requisite of higher agricultural productivity is capital investment, which is what the foreign firm or government brings. As the approach is fundamentally the same as that of European and US private investment in food production around the world, one might conclude that the argument is more about hegemony than food.

Seen in this light, the naked Emperor rails against self-sufficiency as being 'wasteful' and assumes that his definition of waste is common throughout his realm. But that realm has already shrunk and those polite principalities escaping his influence have no need to think about his wardrobe. They are defining waste quite differently – the waste of malnourished children growing into mentally and physically compromised adults, the waste of hunger let alone starvation and even the waste of material resources that occurs by dealing in open trade with a much more powerful partner. The last waste is an accepted cost for those material developments where one must deal with the power, but it is unacceptable for an essential of life – that component of food that is essential to healthy survival.

The decisions are being made now in these countries regardless of international pressures, and it seems that the time for policies specific to the culture and needs of each country will evolve. Two common features of such policies are national food sufficiency plans and support for small farmers who feed themselves and their countrymen. Far from being the naïve copies of Western policies, these food sufficiency and self-sufficiency plans would be relevant and dynamic, unlike both the old socialist bloc and EU plans for self-sufficiency. One might even call it a more democratic approach to world food. In this new world, a number of factors influence food security; let's begin by considering

how international agencies strayed from this first principle of agriculture.

International Approaches

As the most critical component of governments and international development, food has been variously analyzed over recent decades. The philosophical underpinnings of debates about food in development may be grouped into three arguments:

- 1) food viewed as a commodity, and hence tradable like any other good;
- 2) food being a product of the landscape that must be balanced with other products such as soils acting as filters for fresh water, forests maintaining biodiversity and landscapes retaining culturally-determined aesthetic values, and
- 3) food as a right, initially in simple terms, but now confused between moral rights of consumers to what is essential for life and legal rights of producers to protect their intellectual, branding and other property in the market place.

These diverse approaches are brought to the development table by donors based on their own domestic pressures and responsibilities and so, even with the best of intent, can produce biased statements of food security. For example, that of FAO, which by mentioning access to food and nutritional matters omits reference to food production. This has allowed re-interpretation by some donors to orient funds to their domestic interests through such issues as obesity. The assumption that rich nations provide aid to for basic humanitarian reasons has thus been somewhat challenged by recent actions.

Take Asia for example, where more than half of the world lives. More than 90 percent of world rice, 40 percent of cereals and 40 percent of meat is produced in Asia and is mainly consumed in the country of production. After 30 years of economic growth and significant reductions in poverty, Asia still contains more than half of the world's poor in the monetary terms that agencies use to define 'poor', mainly in rural areas. Such facts are usually used to justify general agricultural development to meet the dual objectives of food security and poverty reduction. Relative success in this approach has led to food security being subordinated to a combination of agricultural and rural development supported by trade of cheap food. However, recent national responses to perceived food shortages have indicated that food security is the more critical issue and requires different policy approaches from those for agricultural development, trade and employment. Unless food security is real and well managed, no other sustainable economic development can occur, as illustrated in the following figure.



The crossed out dotted lines in the figure indicate the common international agency approach that assumes agricultural and rural development can directly produce development and poverty alleviation. The way it actually works is that food security underpins national stability, which with good governance can produce development and poverty alleviation. It also indicates that in addition to agricultural and rural development focused on food security, policy and planning for food security is essential.

Food security has been defined variously from national self-interest in rich country arguments to the commonly accepted World Food Summit definition based on everyone always being able to daily access quality food. However, specific agency agendas can introduce specific definitions, such as reliance on monetized and trade approaches rather than underpinning domestic production for domestic consumption. In fact both are critical to food security. National food self-sufficiency remains the major component of food security.

Globally, food security is said to exist for some 4.7 billion persons with another two billion being food insecure in terms of sub-standard diets and vitamin and micronutrient deficiencies that impair physical and intellectual capacity. If global population stabilizes at nine billion around 2050 as optimistically predicted, food demand in poor countries will probably rise to an equivalent of 12 billion of today's persons due to such factors as affluence-induced food preferences and food wastage in urban supply chains. And these population projections now look optimistic. The vision of food security for all is not achievable from current institutional approaches.

Current approaches contributed to the 2008 food price crisis and to political insecurity from food protests. Rural-urban inequities, perceived foreign control of poor country food production and competition for water further weakened stability. National political responses were to protect domestic stability by stopping exports, thereby inflicting further stress in food-importing countries. To argue that a country should maintain open food trade when it experiences a drought and is short of food appears overly ambitious and would require far greater leverage than any country or group with that philosophy could muster. In this scenario as introduced above, agencies have commonly relegated food production to a component of 'agriculture and rural development' or similar. They then add environmental and social objectives. Thus food security is seldom addressed on the complex integrated human-need basis that it demands.

Genuine food security integrates all disciplines, yet such disciplines as social psychology that might inform policy about group decision-making in life-threatening situations

such as less-than-adequate food, are overlooked. A new peer-reviewed journal, 'Food Security: The Science, Sociology and Economics of Food Production and Access to Food' may breakdown some of these barriers if we are lucky and if it attracts some new thinkers. Common economic approaches that treat food as a commodity like any other commodity miss this critical point. Common agricultural science approaches that view production as the major solution likewise overlook disciplines that support such matters as legal regulation and trade policy. As the experienced practitioners know, we have at best a precarious balance that is termed food security and which exceeds the comprehension of the current state of inter-disciplinary collaboration.

Experience is likely to guide actions into the future with an emphasis on maximizing domestic food self-sufficiency and food reserves in the interim while more sophisticated approaches are developed. No credible prediction of future technologies and policies for food security exists; nevertheless, we may be reasonably sure that a 2050 population of nine billion, mainly in cities, could not be supported from current approaches to food production alone. Urban food production, food reserves, fermentation food products, food allotments, a distinction between essential and luxury components of diets and other unfamiliar subjects are soon likely to enter food security development planning. These new approaches must acknowledge a new range of variables that further complicate policy formulation.

Variables in Food Security

With more people now living in cities than rural areas, costs of supplying food and wastage rise and spawn a new risk

group, the hungry urban poor. This group can riot and threaten security – hence food security becomes a national security matter. This explains the instructive cases of China and India with their huge and diverse populations placing a high priority for food security. Investments such as rural access and agricultural research have allowed China to feed itself in the face of various predictions to the contrary. Today China is a leader in both farming new and foreign lands and in agricultural research, as well as being the world's largest food producer.

India has also fed herself, but through a different approach based on subsidies of over \$25 billion per annum for fertilizer as well as other subsidies for power, water, and food prices, and by a priority on domestic stability before export. Likewise both countries intervene in favor of food security by managing emerging risks, such as rising demands for water-use efficiency. India's response is through water users' associations, participatory watershed schemes, and community-based rain harvesting, while China relies on incentives for irrigation systems managers. Gulati and Fan's 'The Dragon and The Elephant' notes that both countries accept food self-sufficiency as the key to food security with liberalized market approaches relegated for surplus-to-security food.

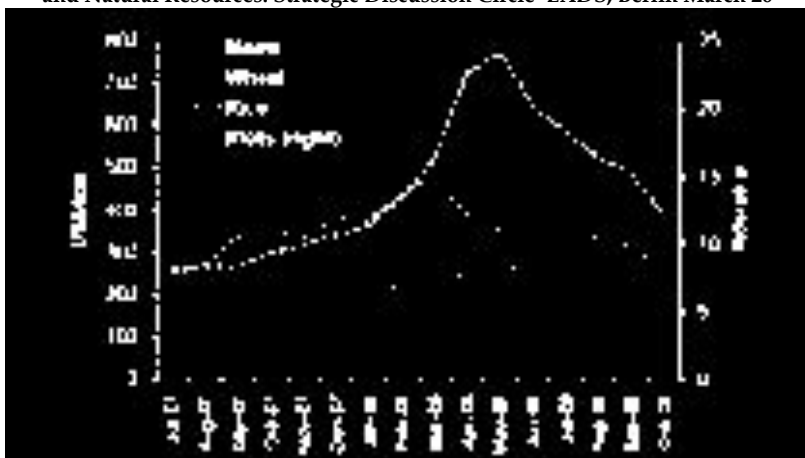
Other countries are less organized and show that food shortages are no longer just another rural issue. In the past, hungry peasants walked in search of food or starved, whereas today hungry urban dwellers readily coalesce into mobs seeking targets on which to vent their anger. Governments' first priority is to forestall such civil unrest. Rising incidence of food protests in more than 60 countries since 2007, of which more than half were violent seems to follow grain prices in the following figure from the elite

International Food Policy Research Institute in Washington DC. With policy neglect, small and marginalized farmers migrate to cities adding to food demand and civic risk.

Added to the increased food demand is that of changing dietary habits. These so-called affluent diets seem to have only minimal effect so far but retain the potential to skew demand. It is projected that at current levels of crop yields, increases in land and water requirements for affluent diets could rise in East Asia by 47 and 70 percent and in South Asia by 30 and 57 percent. Of course, such additional resources do not exist and hence increased yields and efficiency in water delivery and on-farm use are imperative. Hence China's emphasis in essential food grain production in the face of other market demands, and its apparent willingness to move towards treating non-essential foods under open trade.

Food Protests and Food Prices

Source: J. von Braun, IFPRI 2009 Threats to Security Related to Food, Agriculture, and Natural Resources. Strategic Discussion Circle' EADS, Berlin March 26



This is less unfair market interference than recognition of market failure. If the price of an essential foodstuff such as wheat has fallen over the past 135 years as indicated in the graph, it does not necessarily mean that technology has delivered ever cheaper production techniques. It can also indicate that the hungry do not have purchasing power. Purchases may not be a useful indication of demand for essential food; this becomes clear when population is considered on the same graph.

Wheat Prices and Population, 1872-2008

Source: J. von Braun, IFPRI 2009 Threats to Security Related to Food, Agriculture, and Natural Resources, Strategic Discussion Circle' EADS, Berlin March 26



Added to these variables is a bizarre manmade impost of subsidized bio-fuel crop production. The shift of land out of food production has had a sizable and measureable impact on hunger and death. According to FAO's 'State of Food and Agriculture', bio-fuels will have a greater impact on food production to 2050 than will climate change. The best one can say about it is that subsidies are set to reduce and technologies to use waste products rather than planted crops are being developed. Yet land availability overall is now limiting. Robert Thompson of the University of Illinois suggests that the past growth in grain production that has

resulted from expansion of agricultural land areas is now limited to about 12 percent more land globally. That is, if one accepts the definitions for other land uses and of land with agricultural potential. At the same time, the rate of increase in yields is less than in past decades. But again, the experience of China indicates that technologies such as recapture of nutrients from urban sewage can be developed further; as Peter Gregory quips, this is a extension of the old 'paddock to plate' approach to become 'seed to sewage'.

To make matters worse, as a recent editorial in *Nature* notes, international agricultural research funding has been in decline for 20 years and agricultural research training has lost its edge. As discussed further elsewhere herein, agricultural research is not a tap that can be easily turned on to again pump out research outputs without years of priming. The broad and misunderstood issue of climate change belongs here, as a continuing issue that agricultural research routinely factors into its programs. In terms of survival food security, issues that will arise before such research delivers include increases in: the likelihood of crop failure; diseases and mortality of livestock, and insecurity resulting in indebtedness and migration.

More critical to food security since it is affected by both climate and urban competition, is water. Where grain is produced under mainly rainfed conditions, as in the five major global exporters, a net financial benefit of about 11 percent accrues, according to the Swedish Environmental Council. The implications are significant – the success of Asia in feeding itself and exporting relies on irrigation. This means that the largest food production area of the world is faced with increased competition for water from the most populous cities of the world. Quarantining water for food production will require strong governance.

Such variables as these have not before been faced simultaneously. It is one thing to say that the challenge is great, but that tends to lead to more of the same interventions as in the past. Now food security has become a primary focus for many governments of food-marginal countries, and multiple strategies will become essential, including food reserves.

Food Reserves

Domestic production of essential food remains the preferred strategy for food security by poor countries where agricultural potential exists. The following figure from the ASEAN Agricultural Commodity Outlook illustrates the levels of such self-sufficiency for rice in ASEAN countries. In other poor countries, food security rests on perceptions of guaranteed access, which can be undermined by declines in purchasing power, confidence in markets or absolute availability of traded food. Regulated open trade in essential foods may be one outcome of the tension between food security and global free trading, but reserves for national security will be seen as surer than trade agreements. An indication of this is that even ASEAN with such a secure food environment, has plans for a food reserve scheme.

Food reserves around the world have been allowed to decline over recent decades. This has been done in a managed fashion in China as a cost-saving measure. At the same time, China has increased yields, production and cultivated area by huge research investments and international political might and investment. Smaller nations cannot do this, and neither do they have China's diversity of environments. Hence they will consider reserves. It is also

quite possible that China will again consider reserves, this time in diverse locations and cost-efficient forms.

Ratio of Rice Produced to Local Consumption in ASEAN

Source: ASEAN Agricultural Commodity Outlook (2009) No.2 (June).



Whether such stocks undermine or underwrite trade confidence in conditions of scarcity, and whether food stocks need to be national, regional or both requires ideology-free examination. It should be recalled, as the following table derived from FAO statistics indicates, that internationally traded food is an exception – the vast majority of food is consumed in its country of production.

Of course such figures, while revealing much about the hypocrisy of free food trade arguments, also hide informal border trading. For example, Geoff Anderson in kindly reviewing a draft of this book commented that along borders ‘Lao rice becomes Thai rice and Cambodian rice becomes Vietnamese rice since Thai and Vietnamese rice brands are more sought after on international markets’.

Agricultural Exports: Percent of Total Produced, 1960-2005

Region	1960s	1970s	1980s	1990s	2000-05
Latin America/ Caribbean	22.7	23.0	22.2	25.0	31.2
Sub-Saharan Africa	23.3	17.0	12.8	12.2	10.9
Asia - Developing	5.3	6.1	6.4	6.4	6.1
Average Three Regions	11.6	11.3	10.5	10.7	11.2

In the case of ASEAN, an agreement to adhere to the ASEAN Integrated Food Security Framework aims to increase food stability and regional food emergency relief. Food security focuses on the priority commodities of rice, maize, soybean, sugar and cassava. The Framework is based on strengthening national food security, which notwithstanding regional objectives and cooperation recognizes the national pragmatism that arises when security is threatened. The ASEAN Food Security Reserve Board supports a regional approach, but while two or three countries dominate production and effectively manage regional reserves, a regional food reserve cannot be said to exist – unless it is trade-based and hence requires compliance with the ASEAN Trade in Goods Agreement for food products. Being self-sufficient as a region, ASEAN members understand trade as one component of food security. Nevertheless, the failure of markets to anticipate price rises in the recent food bubble has sensitized food deficit member countries. Many are alert for signs of the next crisis.

Food Security and the Recent Crises

The food and financial crises have exacerbated the effects of long-term drivers of food security, and the financial crisis in particular has captured attention in donor countries. The combined effect is a renewed challenge to food security, and development. Food price rises can be linked to oil and bio-fuel prices and subsequent export bans with panic buying ultimately driving prices overly high in a bubble. The food crisis highlighted the priority placed on food above 'commodities' by both the immediate actions of export restrictions and larger-scale purchasing by richer food deficit countries. It also illustrated the fragility of trust in global markets for an essential good.

The combined effects of oil price rises and bio-fuel subsidies appear to have sparked the events that led to the food crisis. Oil rose in price ahead of cereals and made US-subsidized corn bio-fuel production financially viable. Corn was diverted into bio-fuel reaching a peak of 30 percent of US production in 2008. This in turn accounted for some 60 percent of the change in demand for wheat and other coarse grains. Other causes such as reductions in overall production have been widely cited by such bodies as the Asian Development Bank, but do not appear to be borne out by subsequent production data from the former Soviet Union.

Uncertainty was aggravated in the wheat market by droughts in Australia, India, and the Ukraine in 2006 and 2007 and the beginning of a rise in wheat prices. The Ukraine government reacted by prohibiting exports in 2007-8 thereby forcing purchasers to seek other markets, in that case Russia and Kazakhstan. These countries then reacted to protect their stocks and stabilize domestic prices by restricting wheat exports. Argentina likewise intervened in its wheat export markets. Such reactions, initiated by reduced production from a climate event, are estimated to have increased wheat

prices by 50 percent. However, wheat is a widely traded grain. Rice, which is of particular importance to half the world, displayed some variations that are even more instructive for food security, since its producing cultures have managed it on that basis since time immemorial.

Rice differs from other cereals. It is mainly produced by smallholders, often in the major consuming countries, and overwhelmingly in Asia. It is consequently managed nationally as a strategic commodity. As it is not traded as openly as, for example wheat, such actions as hoarding, precautionary purchases or panic buying, and prohibitions on export can disproportionately affect price – as occurred between November 2007 and May 2008 when rice prices doubled. Some events on the rice price path are presented in following figure. It seems that drought reduced India's wheat production at the same time that export demand for Indian rice increased, leading India to restrict rice exports. Interestingly this was the first time such a ban had been imposed and it led to price escalation as foreign buyers were forced to negotiate with other suppliers. This in turn raised wider domestic fears and led to export prohibitions in Vietnam, China, Cambodia, and Egypt, and panic buying by such food-deficit countries as the Philippines. India had until that time exported some 20 percent of world rice, being second only to Thailand. As a shortage of staple food in a populous country could be catastrophic, India's export ban is entirely logical and a sign of good governance, as we will discuss later. It is noteworthy that India exempted Bangladesh from the ban, and continued exports to rich countries of the luxury rice, Basmati.



Source: Headley, D. et al (2009) IFPRI Discussion Paper 0889

I have called the responses of India and other countries logical and a sign of good governance. This is in clear contradistinction to the response of the international agencies. For example, a detailed ADB analysis of the food price crisis considered policy responses to have been short-sighted and preemptive of a normal market response. With food prices continuing to rise post-crisis, the special report argues that 'unless trade is kept open and relative prices are allowed to reflect market scarcity, severe consequences will emerge'. One wonders what such comments mean. I am not being selective when I use this quotation – other agencies have similar negative comments.

We are back to partial economics discussed in the previous chapter. Those analyses must be neglecting factors such as social stability if they view government responses are primarily assisting consumers. In such a context, policies are pejoratively described as 'beggar-thy-neighbor policies', thereby prejudicing multi-disciplinary food security discussion. It seems more practical to consider the urban poor, who with rising food prices spend up to 70 percent of

their total income on food. A doubling of food price in this situation leads quickly to severe malnutrition and worse. In the Philippines, a 10 percent increase in food prices is calculated to push 2.72 million more people below the poverty line. Subsidizing this group might cost around USD 350 million, which is about 0.27% of GDP and is one component of a food security policy. As Phil Pardey calculates, any supply response requires redressing of past investment neglect, some of which includes multi-decadal lags.

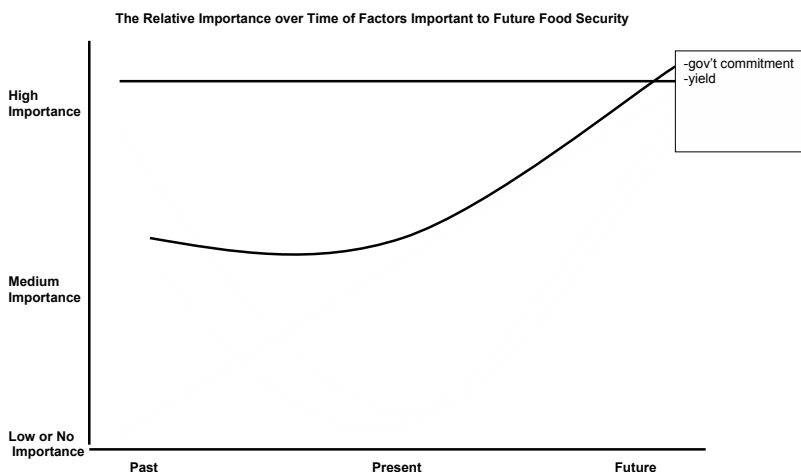
In addition to the food crisis, the financial crisis is instructive to survival food security. In fact it has dual implications for food security: first in restricting foreign aid and second as an indication of the fragility of the free-market/free-trade system when governance is not good. The impact of the financial crisis on overall food security in poor countries may not be exceptionally large, except through such secondary affects as reduced migrant worker remittances. Remittances were estimated by IFPRI at \$305 billion in 2008, which is about 300 percent of aid flows and going more directly to the poor than does aid. In Tajikistan and Kyrgyzstan, for example, remittances represent 45 and 27 percent of GDP.

The lessons for food security from these crises highlight the need for parallel actions. Immediate actions focus on maintaining reliable and adequate food for the affected groups through transfers and social programs like food-for-work, food-stamps etc. At the same time, short-term actions are needed to incentivize farmers in favorable areas to access improved food production inputs that are currently available. Also at the same time, nothing that jeopardizes the self-sufficiency of one to two billion small farmers should be allowed, including even hybrid seeds in some cases; specific policies to that effect form part of food security policy.

Improved national, regional and international institutional competency is required to secure food for the future as an underpinning component of national, and as a result global, stability. The UN Task Force on the Global Food Security Crisis focused on humanitarian relief with some discussion of improved smallholder productivity. Much more is needed, including integrated investment in land use and rights reform, regulatory and institutional reform, improved governance, research, research training, modern extension, agricultural education, vocational training, infrastructure development and marketing. All these sit within an informed and enlightened food security policy.

Informed Policy

Policy development can only be approached on a national basis with strong government and uniform donor commitment. This heralds a return to some intervention options that have become unpopular, such as fertilizer subsidies, guaranteed prices for essential grains and national and/or regional food reserves as part of integrated food security plans. National food security plans, backed by coordinated investment are now a priority and a precursor for stable development in other sectors. At the international level, issues for coordinated action include responsible (waste and by-product) bio-fuel production regulation, improved international and poor country national agricultural research, realistic climate and other environmental change responses, cereal reserves, and viable trade agreements relating to national food security. If it sounds daunting, it is.



We have much knowledge learned from the past 50 years about world food production and demand. Yet much of it has been forgotten with generational changes in ossifying agencies and universities that let agricultural education wither with 'demand'. As indicated in the diagram, future food security will require a focus on at least: government commitment; yields; water; the private sector (much more than empty 'private-public-partnership' dreams); local capacity; research; food reserves/stocks, and small farmer policy that they feel is relevant. Present institutional attitudes neglect many of these. Many of the current challenges are iterations of those that have motivated past innovations of policy and technology. While acute in some cases, such as for water, there is an expectation that these challenges can be met with appropriate investment and commitment.

The expectation is based on informed experience, which has followed the pattern first observed by Ester Boserup more than that of doomsayers. It is also clear that such challenges cannot be met from current approaches alone. Current approaches to development have downgraded food

production in favor of other aspects of development, which has been possible while relying on the residual capital of earlier food production development successes. That capital is now exhausted and recreation of food security will now require a major and sustained development focus.

This must occur in the face of naïve attitudes in some quarters concerning the complexities of food production and food security for these factors will increasingly determine real economic potential. One of the foremost of these naïve attitudes is that the small farmers who feed between a third and a half of the world, will or should be forced to disappear from poor country agriculture. The sky would surely fall if the group supporting half of it were removed – women in the Chinese saying. And farmers include more women than men. Well is it said that ‘small farmers support half of mankind’.

The next chapter considers small farmers and their role in essential food production.

Chapter 4

Forgotten Food Producers: Small Farms

First it is important to recall that we are talking about essential food for a reasonably healthy life. We are less concerned with tender beef, faddish diets, manufactured foods, and totally unconcerned with the food issues of rich countries, even when expressed in terms of ignorant malnutrition and other disorders expressed through over- or under-eating. Those may be called superfluous food issues in the context of our focus on real food security for survival. Small farmers play a critical role in such food security in the poor world. They feed themselves and their families and in some cases sell their surplus to feed rural towns and even urban supermarkets. In this chapter we shall examine their role, but never stray far from our central theme of basic food security being the provision of essential food for survival.

Second, we must remember that most food is produced in Asia, not the West. It seems that a new generation has emerged that topsy-turvily assumes poor countries are not efficient or major food producers. One fact clarifies this: China consolidated its position as the world's leading food producer before 2008 with a 30 percent increase in value according to WTO; and it was one of the few members that provided data to WTO for 2008. The second largest producer is Europe, or on a per country basis, the USA. China already produced more food on this basis than the US in 1995, the first year of the WTO data. While the WTO valuation basis may be less concerned with high-volume low-value food for security/survival in poor countries, it serves to correct erroneous views of where food comes from. Yet, some US

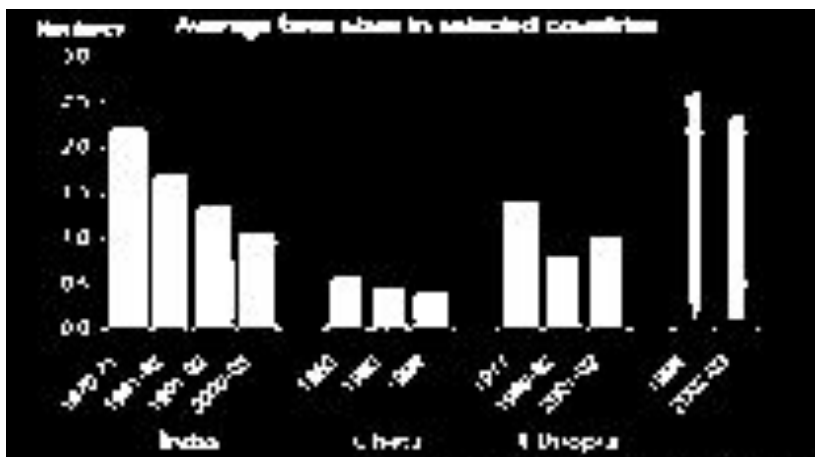
literature continues to claim that country is the leading food producer, and many agency staff seem to feel that is correct.

Third, if you are still reading this book, you are probably more familiar with a broadacre farm than a small farm. And just as we excluded the common rich country interpretations of food security in the above paragraphs, so we exclude their conceptions of small farms being small relative to surrounding farms; a 50 ha farm might be called small in the USA or Australia but would not be considered to be small in this discussion. In poor countries, we are dealing with much smaller farms, which are the majority of world's farms and farmers – billions of them, and many classified as 'landless'.

Billions of Third-World Small Farmers

Of the world's 530 million farms, FAO records 85 percent as less than two hectares, 12 percent between 2 and 10 hectares, 2.7 percent between 10 and 100 hectares, and 0.6 percent more than 100 hectares. Average farm size in most poor countries continues to decline, as indicated in the table for four sample countries. The small farm sector of poor countries involves some two billion people – it feeds them and provides a surplus for non-producers in towns and cities. In round figures, small farmers feed half of the world, more if we only considered essential food for basic lifestyles, which would exclude such luxury foods as out of season produce and grain-fed livestock. Small farmer yields under these intensive conditions are often higher than under the extensive broadacre systems common in rich countries. And where research has been oriented to small farms, yields increases among innovators have exceeded broadacre yield increases.

Source: J. von Braun, IFPRI 2009 Threats to Security Related to Food, Agriculture, and Natural Resources. Strategic Discussion Circle' EADS, Berlin March 26



These are reasons enough to seriously question arguments to abolish smallholder farms simply in order to mimic rich country patterns. In addition and as noted earlier, programs that wittingly or unwittingly reduce small farms must confront the direct costs of welfare for the billion or two extra persons that would no longer be able to feed themselves when displaced to cities. In any case, poor countries cannot afford such a financial cost, especially when it is recalled that the replacement broadacre farms yield less food, and that supply of food to cities leads to greater wastage than consumption on- or near-farm. Of course wastage is less in tightly regulated Western systems, but this is due to logistics, organization and regulation not to broadacre production per se.

This is not an argument against broadacre farms – it is an argument for rational economics, which would immediately

see the value of maximizing productivity of the most scarce resource. Wealthy nations with low population densities face a labor scarcity and so seek systems that make efficient use of labor; high population poor nations face an arable land scarcity and so have evolved systems that maximize efficiency of land use. When it comes to feeding people, efficiency of land use means more food per unit area – the system in place in poor countries. Broadacre suits many situations, some of them even in poor countries, and we will see that they become as important as small farms in the equation of future food supply. Not one or the other, but both working efficiently – the time for ‘either-or’ style denigration of production systems and technologies should be absent from international development discourse.

I have noted in other works that ‘the Asian smallholder has consistently fed Asia, generated exports and accepted technological innovations while feeding himself and enjoying less social protection than his compatriots. This is quite a compliment. Economic models that follow [rich country] patterns of reduced farmer numbers and increased sizes of holdings should be compared to models of smallholder production systems before suggesting policies to consolidate land into larger farms. [Green Revolution Research Centre] experience indicates that research oriented to small farms can produce fast uptake and high returns compared to broadacre systems where personal attention must span larger areas ... For example, the ‘precision agriculture’ approaches based on GPS and on-line feedback for variable fertilizer application is a working system that approaches one aspect of smallholder memory and attention to local variations in soil fertility. It is not yet used over the majority of [rich country] agriculture, and focuses on one management parameter of the many that smallholders can readily manage on their small plots [without sophisticated

technology]. Until costs of such technology fall and it extends to other management areas, smallholders continue to enjoy management advantages over broadacre production systems.'

Correcting the Bias

The smallholder dilemma is central to both food security and agricultural development debates – it is symptomatic of the assumption that development will follow rich country norms. This uninformed, undiscerning and often institutionalized view assumes that development will increase off-farm employment at the same time as farm consolidation allows adoption of broadacre technology. On the other hand, informed practitioners contend that poor countries are different and that their population has grown beyond the numbers required for industry. They also see that small farms offer potentially higher levels of management input and production than broadacre farms. As noted above, neither view is universally correct. What is correct is that for the foreseeable future smallholders will continue to be both the base for basic survival food security and a welfare substitute in poor countries.

At the same time, consolidation of small farms into larger areas may well attract larger private investors who while theoretically able to contribute to food security, are more likely to be drawn to higher value luxury foods. Thus small farms with higher food yields become parts of large paddocks that produce lower yielding less-essential foods. In the absence of specific policy, the situation has been left to market forces, which has begotten such systems as contract farming for supermarkets sometimes as a precursor to control over land by the markets themselves. This is well and good while all remains stable, but it never does. And when

upsets occur for reasons of normal climate variations, global market events or conflicts, markets fail to anticipate food security requirements. Then insecurity fuels urban anarchy. To so entrust national stability to market forces would never be considered by a rich country; neither should be imposed on a poor country by rich ones through their influence in international finance agencies and aid. This is why small farms linked to basic food security for survival and social welfare should be part of priority national policymaking.

Small Farmer Advantages

It is neither necessary nor useful to take up space extolling specific small farmer successes. The field is well served by informed practitioners, and the facts are well known by those with experience. So we will take only a very brief look at some examples. Smallholder production offers specific skills that may not be accessible in broadacre agriculture, such as pre-processing on-farm, orientation to specific markets including organic produce and maintaining competitive cost structures. A review by the Australian Centre for International Agricultural Research presents some instances in which small farmer initiatives produced higher returns than alternatives, such as:

- the shift from plantation tea to small farm tea production in Sri Lanka,
- Sulawesi cocoa growers who receive an unprecedentedly high 80 percent of the world price at their farm-gate from an industry started by their own initiative,
- Vietnam cassava growers who have graduated from being price-takers for bulk carbohydrate raw material by seeking new varieties to service 60 new local starch factories, and now considering expansion to produce bio-fuel that does not conflict with food production.

Some other less certain trends inform decisions to support small farmers including the development of supply chains by supermarkets in rapidly growing economies. While demands for consistency of quality and delivery service can exceed some small farmers' capacities and limit them to lower premium markets, others make the transition. We shall discuss that transition from subsistence to commercial later in the chapter, but for now it is sufficient to know that small farmers are skilled assessors of risk and identifiers of opportunities. The examples relate to cash crops, but the same applies to home food production. The essential point is that, as the modified table from the Global Donor Platform for Rural Development demonstrates, there are different transaction-cost advantages for both small and large farms:

Small Farms	Large Farms
<ul style="list-style-type: none"> - Close supervision of farm household labor - Detailed farm knowledge down to small areas, plants and animals - Feeding the family on fresh produce directly from the farm - Empathy with livestock & high levels of animal welfare 	<ul style="list-style-type: none"> - Sourcing and managing skilled labor - Access of technologies and markets - Deals on inputs, credit, contracted and bulk sales, government favors - Secure tenure over land - Possible QA of produce across supply chain

Yes, each size of farm has its advantages. Yet it seems common to describe small farms in poor countries in terms of their disadvantages compared to broadacre farms. Thus, it is said that small farms cannot: source or manage skilled labor; readily access technologies and markets; negotiate deals on inputs, credit or contracted and bulk sales; arrange secure tenure over land, or assure quality of produce across the supply chain all the way to supermarket shelves. Such

erroneous and common criticisms reveal the bias in development thought that assumes that a trade-based model suits production of essential survival food. I am sure we will see more of the same biased analysis applied to water where it is in short supply, with similar forgetfulness of the human behavioral aspects of economics, which for life's essentials mean much more than quantified elasticities.

But is this such a dilemma? Small farmers who organize and manage well in transparent groups to deal with supermarkets already reap benefits. These small farmer organizations integrate supply chain functions like transport, storage, processing and input supply. Experience indicates the issues to be wary of, such as corruption when groups become too large and complicated. Large farms enjoy market benefits but may not easily produce niche products or enjoy the highest production efficiencies. As world food production is overwhelmingly a private-sector activity, government influence in both small and large farmers is largely limited to assistance and provision of public goods, including health and education benefits that facilitate future adjustment. These and other supporting investments in the form of rural roads, research and sensible extension require specific orientation to small farmers. And if pointing out that essential food for reasonable survival is not amenable to simple financial valuations does not quash biased arguments, then full economic analysis in terms of social stability certainly will.

Social stability at the provincial and national levels refers to ensuring that the populace is adequately fed. Adequate fed is simply defined; it need not be complicated by other definitions that include dietary preferences as a right. For example, the 1996 World Food Summit compromised on the definition: 'Food security exists when all people, at all times,

have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.’ What it should really mean is that when a staple food’s supply is threatened, national strategies to avoid hunger, panic and violence are implemented. A recent example is India compensating for wheat deficits after a drought by ceasing export of the alternative cereal crop, non-luxury rice. In addition to this definition, social stability also refers to local social solutions that exclude government where bad governance is known to have exacerbated social ills. One example comes from Southern Thailand, documented by Thaksin University, in which sharing of a water resource between Muslim and Buddhist villagers was developed by villagers themselves rather than accept a government scheme that did not promote cultural integration.

Awakening to the Continued Role of Small Farms

Consideration of small farmer agricultural development requires an objective intellectual approach that does not seem to come naturally to all scientists trained in Western modes. Those with much experience feel increasingly marginalized by follow-the-rich-country and business-as-usual attitudes of development agencies that have purged themselves of corporate memory and distrust experience. And the void created by such negligence has stimulated responsible private sector initiatives for small farms in poor countries.

The Syngenta Foundation for example has successfully trialed a new crop insurance product in Kenya. The approach provides weather-indexed-based drought insurance served by a respected insurer, the meteorological service and agricultural input/product dealers. The system

is based on farmer training, farmer registration for insurance when buying seed and other inputs, input dealer SMS to the insurer, local meteorological data being sent to the insurer, insurer calculation of payouts due by comparing rainfall to an agronomic model, and advising farmers of any payouts by SMS which are then collectable as inputs from the inputs supplier. The model is now being trialed in Asia and is expected to suit both semi-commercial and commercial smallholders.

There also appears scope to widen the number of small farmers that can be reached by the outcomes of private sector research. Of course, the private sector has no obligation to be altruistic and so their focus is on commercial opportunities. For those neglected smallholders that have resources and capability suited to increased commercialization, such private sector schemes may assist their emergence from subsistence to semi-commercial to commercial to advanced producers as indicated in the Syngenta Foundation's figure below. However, small farmers on marginal lands or with other limitations will remain isolated from this progression – and these are the majority. Policy initiatives specific to smallholders at each level from subsistence through stages of commercial transition would be part of planning under a national food security policy.

The overall picture created here is useful. We can quibble with the words – post-harvest losses affect small and large, subsistence and commercial farmers, and 'advanced farmers' in this model of progression are not necessarily broadacre farmers – but the transition works for a small number. The technological innovations are conceptually the same as those that have characterized world food production for a hundred years, and this is assumed to continue, through such transgenic innovations as insect resistance and enhanced

nitrogen use efficiency, for all farm sizes.

Subsistence to Commercial for Some Small Farmers

Source: M. Ferroni (2009) Syngenta Foundation. Crawford Fund Conference, Canberra



The relative merits of small farmer and broadacre agriculture are of little import here because, as we have seen, both production systems are essential to securing future food demand. To rely on broadacre farming alone exposes food production to increasing vulnerability as resources of oil, mined-fertilizers and soil vitality decline and expose countries to excessive economic costs of assimilating billions of displaced persons. On the other hand, it is unrealistic to assume that smallholder agriculture can meet all the needs of the urban supermarket, even for essential foods. Improved efficiency of both sectors remains the need, with policies and research properly focused on each production system rather than maintaining a worldview that one-size-fits-all in international agricultural assistance.

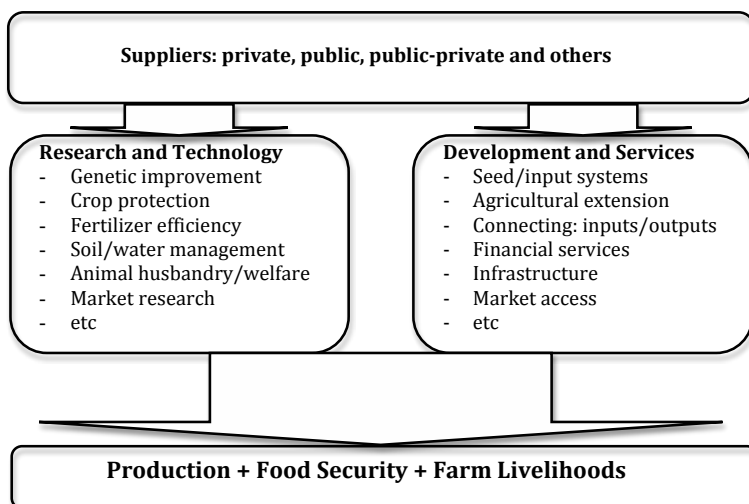
Challenging Worldviews

This wider worldview challenges some tightly held prejudices. I see the situation as akin to, yet even more serious than that which Charan and I challenged in our book 'Smallholder Dairying in the Tropics'. Many development agencies of the 1980s or so held strong views that dairying was more efficient in temperate regions, for that is where high yielding dairy cattle were bred and raised. Our argument was that the majority of dairy cows, the highest total milk production and highest total milk consumption were in tropical India. In addition, technologies developed there over millennia were clearly more sustainable than those of dairy industries skirting animal welfare sanctions in rich countries. We did not change the world, but a wider and continually expanding awareness developed from the International Livestock Research Institute's publication of our book.

Prejudices against small farms must similarly be dispelled, and this may curiously allow a wider appreciation of what the international private sector is already doing on small farms. The private sector example above introduces new technological mixes that are designed for small farms in poor countries rather than derived from rich country models. For example, the use of SMS in legal transactions seems to have been a poor country innovation that is now penetrating the richer ones. We must expect that small farmer demand for improved technology and services will continue to translate into commercial innovations in conjunction with international private sector groups. After all small farmers are archetypal private sector units, not the development pawns they are assumed to be in agency reports.

Research to serve such development requires different approaches from the government research stations and even the international research centers of the past. Outputs from technological research as described in the modified Syngenta figure below require new product introduction and uptake through field trials, regulatory approvals, input markets, extension advice, financial services and so on. This is a conventional approach and so adapting to other changes may suit a partnership arrangement between the ‘old’ systems and the private sector – but what is now clear is that private research bodies have higher commitment levels and do not blink when confronted with criticism like the ‘old’ research groups do. Such a focused culture could re-invigorate international agricultural research and attract leading scientists. The old men may dream dreams, but young men with vision are needed for re-focused international agricultural research.

One R&D Model for Private-Public Sector Collaboration



Taking a whole-of-system perspective clarifies roles of the

private sector. This varies from isolated institutional worldviews including those that purport to integrate the private sector but are often just disguised research-fundraising. By having private sector experts develop such models, development institutions can join and so better inform national government policy, projects and technologies. An even wider approach advocated by another huge private sector group, Dupont, is based on real partnerships – partnerships that are so different from those of the currently popular public-private partnerships themselves that the idea initially takes international agencies' breath away.

Real partnerships in this public-private model build on the strengths of each partner and, critically, bind each partner to long-term accountable outcomes. The approach has been trialed with some of the Green Revolution centers, for example in the development of lysine-enriched food crops for poor country farmers using genes initially isolated by Dupont for different crops and markets. These partnership modes challenge most international aid organizations that have remained with routine project or programmatic approaches. Being accountable for an output requires close management, and focused inputs with commitment of both financial and expertise resources for as long as it takes; this is quite different from the cozy motherhood output statements that have become commonplace in development agencies.

It is from such emerging modes of operation that a wider harvesting of the scientific and related financial resources of the world can be focused on some – a small proportion of – small farmer research and development needs. In terms of the evolutionary model of small farmer development discussed above, which shows a transition from subsistence to semi-commercial to commercial smallholders to advanced

farmers, the role of the private sector is clear. It begins with basic input supplies and progresses to improved genetic material and moves to processors in the semi-commercial stage. Multinational agribusiness experience also suggests that local market development stimulates small farmer development more than do routine agency projects.

This has further implications for private sector partnerships in such functions as knowledge transfer. For example and as embellished later, a World Bank related study in India indicated that small farmers ranked private sector and media sources of new information way ahead of conventional extension systems. This is why private sector players do not view conventional extension as a viable communication channel.

However, the proportion of small farmers that can benefit from such commercialization is unknown. If one must guess, it could be said to concern less than a quarter of small farmers. This is still a huge number – involving perhaps 400 million persons perhaps. And we should expect there to be technological spillover benefits, and risks, to non-commercial small farmers. This is the present situation but might more often be seen as the future in conventional agencies locked into old paradigms. The following section takes up that subject of past, present and future conceptions of small farmer contributions to food security.

Shifting the Paradigm

The international development community has maintained an involvement in agriculture despite numerous pressures to move to other sectors, but at a cost. The cost has been to allow agriculture to shift from having a primary focus on food production to one of contributing to other supposedly

'higher' level goals, such as natural resource management or income generation. Such dilution has biased policies against small farmers who are seen as not supporting or not amenable to such goals. For example, small farmers marginalized to fragile ecosystems are seen as the antithesis of good natural resource management. Likewise, the majority who successfully feed their families yet are unable to move into commercial agriculture are seen as unsuitable candidates for income generation objectives. In this book, production of essential food for survival where there is a risk of inadequate supply is ranked above such objectives, which in turn are seen as both subsidiary and changeable over time as development ideology shifts with its fads. That is why small farmers are here said to be the Forgotten Assets of Development (the real FAD). Curiously, it is I-FAD – the International Fund for Agricultural Development, established with OPEC oil funds – that seems to come closest to this reality about small farmers; but then IFAD is a marginalized poor cousin in the UN family.

As The Economist recently noted, 'economic policymaking like hemlines, has fads'. Small farmers – what I call the real FADs – have not been part of these fads, primarily because most agricultural economic thinking of recent decades has been preoccupied with rich country issues. This is no major criticism for it does not differ from other fields of learning. Diseases of affluence receive more research funding than those of poverty. Energy research is oriented to maintaining wealthy lifestyles more than to small-scale devices that will enhance poor peoples comfort, and so on. But what is different is the assumption that the economic model for rich nations is applicable to all others. Rather than trying to extract useful policies from a flow of fads oriented to trade of luxury food products, a more practical solution stares us in the face. It the spectral face of starvation when survival food

security and its producers are lost from focus.

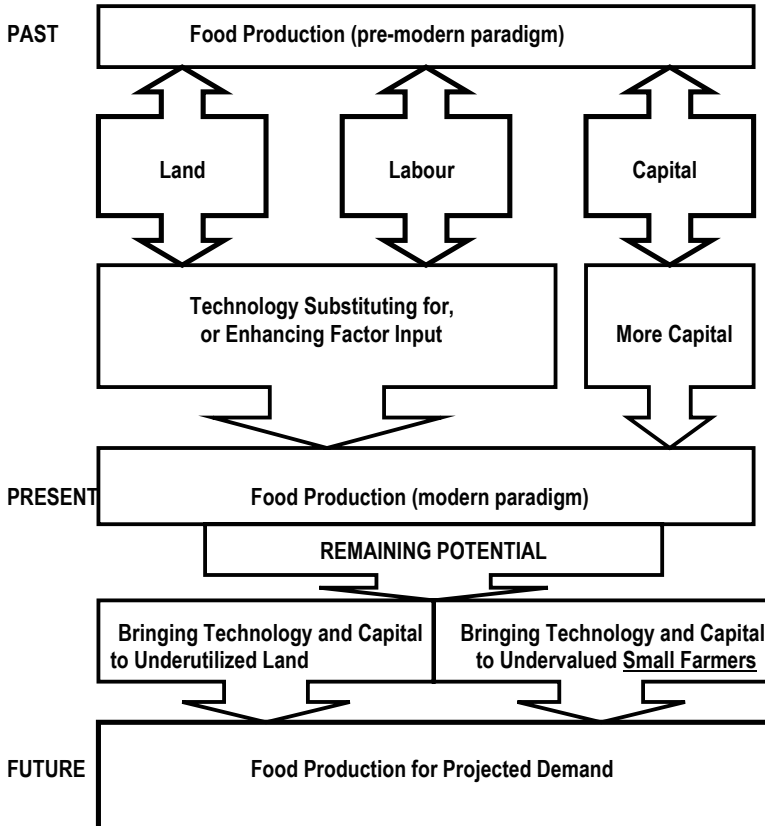
The difference between common approaches and what is more needed is readily understandable by a consideration of past, present and future conceptions of small farmers in the following diagram. In the past, which in development terms I am using to mean pre-1950s, food production was seen as a product of three major factors – land, labor and capital. Economics was taught on this basis and development planning assumed these as the major or only factors worth considering in planning projects. That model had been useful for interpretations of the expansion of food production over centuries, and had similarly been a useful lens through which to interpret agricultural history in Europe. The theory held that, for example, labor might substitute for land or capital to certain extents and that the limits of substitution would define management options.

The old paradigm with its three factors of production was a product of the industrial revolution (for want of a date, others might claim that the agricultural revolution itself is more correct) and gradually acquired a fourth factor, technology. When land and labor became limiting or agriculture unmanageable with expansion of land areas such as in the New World, technology offered means of substituting for some the inputs of land and labor. Greenhouse technologies substituted for land and tractors for labor, for example. At the same time, more capital was needed to fund such additional investment. Again, the idea was not new – since the 1960s Ester Boserup had made development specialists aware that technology was a real factor of food production and so pulled the sheet off the Malthusian specter's face. This is a way of describing the paradigm that underwrote the Green Revolution and its spectacular successes.

This is the present paradigm that is still informing development agency decisions. It is not wrong, but can now be updated as we have reached some physical limits of expanded food production. New arable land, for example, is increasingly difficult to access. Thus two of possibly many factors warrant consideration. The first may be seen as more of the same through technological increases in the productivity of land. The second is the application of technology and capital to the main producers of essential food in poor countries – small farmers. This is the major shift that is now needed; small farmers have been undervalued and so have become marginalized by both inadvertent and deliberate agricultural policy that has failed to focus first on essential food security.

Technology for small farmers is not simply research conducted at research centers or in more advanced countries where agriculture fulfills a quite different role to that in populous poor countries. It is research that suits the land sizes, labor inputs and capital availability of small farmers, and usually without any assumptions that food products will be sold. Bringing capital includes development of infrastructure in areas where these small farmers live and work so that subsistence does not have to mean exclusion from social programs such as health and education services, or from markets if some surplus is sold. Recognizing that small farmers are feeding more than a third of the world and virtually all of that in the poor countries, is sufficient justification for this approach. Some programs are drifting towards this new paradigm. If they are to continue to learn from experience, mainstream funders of development assistance will follow them. Such an approach would lead to a more detailed understanding of these primary clients as described in the following section.

Forgotten Asset of Development: Small Farmers



Towards a Small Farmer Friendly Policy

With a greater focus on small farmers in research, infrastructure and services comes a need for understanding small farmers. As indicated in the next diagram, this includes

such aspects as small farmers' motivations, specific needs, learning sources and links to areas outside their farms including urban linkages. It is not sufficient to imagine what motivates a small farmer, especially the majority who place subsistence as their first priority. In any case, it is unlikely that the lifestyle of international agency staff affords much ability to understand let alone empathize with them.

The specific needs of small farmers may also surprise development practitioners. For example, a large experimental agricultural project in the Philippines in the 1990s that aimed to orient interventions to expressed needs of farmers found that none of the priority needs were agricultural. Such an outcome presented major problems to an agency and a project staffed with agricultural experts, and so some lower priority agricultural ideas were targeted. The priority needs that were elicited were thus not addressed because the reigning paradigm pre-determined project activities. And this project was considered the most avant guard approach of that aid agency at the time. The innovation of seeking small farmers needs came to little in that constrained agency environment. What were the higher priority needs expressed by small farmers in that case? Such things as children's education, family health, access and personal safety. Does this mean that subsistence farmers would not benefit from new technologies? No, just that these small farmers had fertile lands producing food surplus to their needs and so other needs became of higher priority.

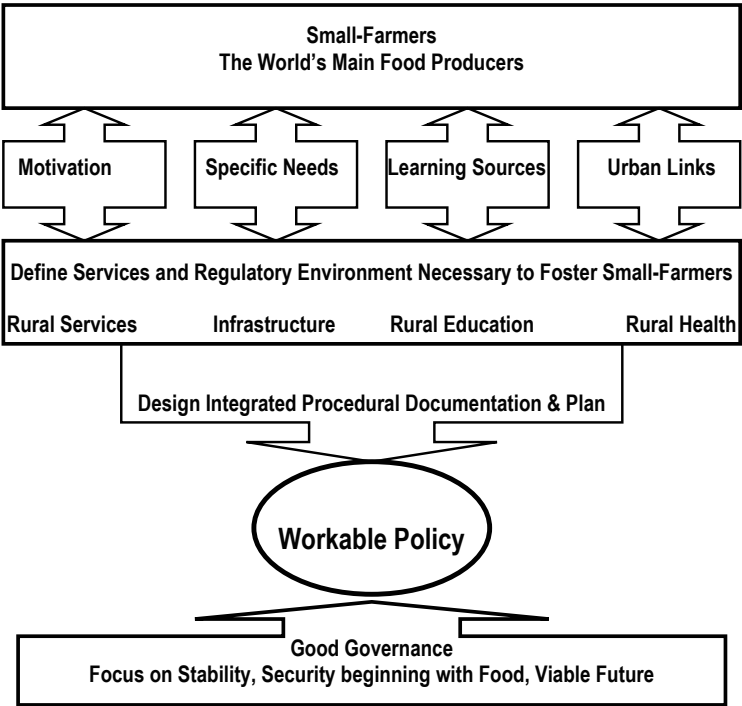
An understanding of how small farmers learn would inform communication mechanisms with them about new technologies as well as markets for any surpluses above subsistence. Likewise, understanding of links to markets in urban areas and even village markets would also be essential to viable development. With such an understanding, the

services and regulatory environment necessary to support and foster small farmers would be able to be formulated for such matters as rural communication services, infrastructure development, education and health.

Empathic understanding like this might be expected to impart a more integrated view of food production and rural life in general, which would probably lead to questioning of single or simple input-output approaches to development. Using a paradigm copied from specialized sections of Western business and government for vastly different cultural situations has seldom served the objectives of agencies or small farmers, or other intended beneficiaries. Yet agency approaches cling to those sources for their procedures. The most instructive worldview for real life seems to be one of delimiting components and projects, which I note anecdotally is a surprisingly common view of informed and concerned field practitioners after a few decades experience. This may go some way to explaining a phenomenon mentioned elsewhere herein of the disappointing exit of disaffected yet experienced advisers and scientists from international research and development.

From well-designed and flexibly integrated assistance, a malleable plan may be expected to lead to an overall policy that supports small farmers, or at least protects them from unintended effects of other policies. This workable policy forms an integral part of good governance as is discussed later. But first we will discuss further the policies that alienate the main food producers and aggravate risks of food and hence civic security.

Policy Starts with Small-Farmers: Forgotten Assets of Development



Chapter 5

Why Bite the Hand that Feeds?

Mess and Confusion

Why is there not a common agreement to secure survival food needs for poor countries or for supporting small farmers? The answer begins with some interesting distinctions between the countries receiving agricultural assistance and political interests. It is a field in which bilateral aid should not be viewed by any informed observer as altruistic. Governments are elected or formed for the benefit of citizens, and so aid at best reflects some of the views of a country's citizens filtered through a complex range of political interests with diverse players. Few, if anyone, understand the intricacies of international aid in total; I don't and I am not sure that such a person exists.

Some of the confusion arises from high-level definitional vagaries. For example, as illustrated in the table and its footnotes, even such terms as 'less-developed country' and 'more-developed country' are at best relative. Different agencies have different lists. Of course there is common agreement on many countries and approaches, but when we examine the features often mentioned to reach such clarity, we find that the differences are stark for matters that development aims to address, like infant mortality. But other features such as demographics are usually highlighted only in negatives rather than the potentially positive side for 'less-developed countries'. An example is young rather than aging populations.

In terms of essential food production for survival, differences specific to food production are what should drive different approaches to development between all, not just rich and poor, countries. Between rich and poor, for example, the proportion of a country's population engaged in food production differs from three compared to 70 percent. As the table notes – 'such stark differences preclude similar development models'. It is neither logical nor equitable to assume that the 70 percent of persons engaged in farming in poor countries will reduce to three percent in a few decades. Logic would suggest that the social differences should be acknowledged and appropriate means developed to orient services to food production and the people engaged in it. Equity considerations would suggest that a nation that can support itself from only three percent of its population engaged in farming would have significant trading and negotiation advantages that will never be shared with poorer nations.

Less-developed countries have defining features such as rural resilience in the form of small farmers. This reflects a base on which sound food production policy can be based. Small farmers who can feed themselves and also absorb their destitute urban relatives when cities turn hostile have a high economic value, even before any surplus food sales are considered. To suggest models that encourage small farmers to move to the city imposes not just additional food costs from wastage and transport, but loss of the economic value of resilience and refuge for city rejects. And as I have reiterated, displaced small farmers will only swell the huge unemployed and exploited labor pool in large poor country cities. In quantitative terms – not that this is the correct way to value essential matters of life – the economic value for national comparative purposes might simply be something like:

- (1) Value of food consumed by subsistence small farmer family
- +
- (2) Cost of food losses if small farmer forced to the city
- +
- (3) Cost of additional urban infrastructure if lifestyles are to be maintained
- +
- (4) Cost of social welfare if city outcasts could not return to country cousins
- +
- (5) Cost of increased risks of riots when food is short in cities

The table also includes differences in the 'influencing philosophy' in rich and poor countries, which reflects cultural and political differences. In searching for a new paradigm that ensures security of essential food for survival, the differences set the framework for sensible policy. The experience of the development community is sufficient to know that idealized visions of democracy, good governance and social equity cannot be accomplished by premature action. What seems an acceptable approach in a rich country may well be useless or even damaging in a poor country. If food supply is not secure, none of these other development sectors have meaning. 'First secure the most basic essentials of life' has been and remains the foundation of good governance in its various forms across the ages – it has been thus since civilizations began, and probably before. Thus we may simplify the cultural discussion at this stage by noting its two principle aspects. First, the cultural gap between rich and poor nations precludes most imported notions of development. Second, cultural variations between poor countries indicates the need for working in each society to

evolve workable policies rather than using agency-designed templates.

Less Developed Country	More Developed Country	Comment
Definition: usually assumed to mean a country with low levels of consumption choice, physical and social well-being and governance.	Definition: usually assumed to mean countries developed in the style of 'Western' countries in material wealth and governance.	No agreed definitions exist. ¹ At best the terms are relative and serve to allow comparison of countries.
Features often mentioned: <ul style="list-style-type: none"> - high infant mortality - low literacy - low average income - low levels of equity - limited 2° & 3° industries - limited export earnings - low health & longevity 	Features often mentioned: <ul style="list-style-type: none"> - low infant mortality - high literacy - high average income - high levels of equity - much 2° & 3° industries - high export earnings - high health & longevity 	The relative terms of LDC and MDC assume 'development' as in the West, with economic development integrally linked to social welfare; the terms confuse facts, e.g., the LDC Cuba has low personal incomes yet lower infant mortality and higher literacy rates than the USA. ²
Features often avoided: <ul style="list-style-type: none"> - high young growing populations - high population density - family self-sufficiency 	Features often avoided: <ul style="list-style-type: none"> - aging, stable or declining populations - variations in urban densities - government welfare 	Such stark differences preclude similar development models. Centralized welfare, for example, requires wealth and strong and equitable governance. ³
Food production: <ul style="list-style-type: none"> - c. 70% engaged in farming - mainly small-farmers - rural resilience - respected way of life - national vulnerability 	Food production: <ul style="list-style-type: none"> - as low as 3% in farming - mainly broadacre farms - common welfare net - business - insulated by power/surplus 	Food is critical to governance for both MDCs and LDCs; LDC small-farmers also provide a social welfare function otherwise unaffordable, yet high population makes urban LDC dwellers vulnerable as LDCs have low international influence. ⁴
Influencing philosophy: <ul style="list-style-type: none"> - cultural beliefs - Western veneer - family/village focus - governing elite - rural-urban difference 	Influencing philosophy: <ul style="list-style-type: none"> - material welfare - assimilation of migrants - urban values - democratic elections - reasonable equity 	LDCs appear to follow MDC views until crises reveal underlying priority of stability from food and traditional values. ⁵

¹ The World Bank defines countries with average daily incomes below about US\$33 per person as 'developing' and separates them into low (up to US\$3), lower-middle (US\$3 - 11) and upper-middle (US\$11 - 33). Wealth is assumed to be measureable in forms that describe 'developed country' economies, thus 'newly industrialized countries' enter the list on the assumption that industrial development is a step towards becoming 'developed'; the IMF includes diversity of exports thereby excluding some high income oil exporters.

² The dynamic term 'developing' is seldom considered to include decline or static states, such HIV-AIDS affected states. In fact, the terms may be seen as interest groupings to maintain a world-order in which MDCs remain wealthy despite shifts in natural resource reserves, levels of education and age demographics. As such terms as MDC become even more confusing, the interaction between MDCs and LDCs may well lead to entrenchment of LDC values, including efficient small-farmer food production, and approaches if they can provide services to MDCs. For example, cheap consumer goods from China, or affordable medical and luxury tourism services in LDCs for MDC citizens.

³ The differences between MDCs and LDCs is thus not in development but in other factors. While not presented here, alternative analyses that have used 'contentment' or 'general feeling of well-being' as an indicator suggest that 'developed' cultures are more likely to be those of poorer countries with strong cultural bases.

⁴ A full economic analysis, that is one that considers all factors apart from those easily monetized, would value the welfare benefit of rural resilience and other cultural benefits for comparisons as to whether a country is more or less developed.

⁵ Globalization is an observable phenomenon that has accelerated in recent decades, yet its impact is less than what it may appear if crisis situations are observed. For example, China and India have each successfully implemented food security policies that were criticized by the Western development agencies, and have joined in international discussions and groups such as WTO in good faith; but when India faced a food shortage, it logically followed national protection principles and constrained some food exports rather than adhering strictly to WTO open-trade guidelines.

The table and its notes provide an indication of the differences between rich and poor countries as well as the lack of definitional rigor. The latter may not matter if the flexibility required to develop workable policies in poor countries is allowed, but it isn't. This is key to improved survival food security in its most basic sense, and its indissoluble link with small farmers. The differences also imply reasons why assumptions that economic development will follow rich country models are naively optimistic, as is discussed further in the following section.

Economic Development Pathways

Like Schrödinger's cat, we cannot really be sure what will work in the complex socio-biological environment of development until we try it. And even under the best conditions, the beauty of some development approaches seems to only be skin-deep. But there is more than one way to skin this cat – there are multiple paths to economic and equitable development, which is what the following diagram shows by way of four examples.

The usual model of economic development is indicated as Path 1, which begins with agriculture for essential food. Once this seems assured it then moves non-food or luxury-food production. The latter two categories provide raw material for some agro-industrial facilities that soak up those displaced from agriculture as it becomes more and more technological driven. Agro-industries spawn other secondary industries that provide life-style products. And as life-styles become more sophisticated, so demand for services increases and a tertiary industry develops for new products ranging from banking to tourism. With good governance, a redistribution tax system allows a degree of social equity,

which is usually expressed as a social safety net so that all in the society can expect at least a basic level of life. It is a model that has worked – indeed it is more an interpretation of rich country development than a theoretical model for future development. That in itself should suggest that it might not be universally applicable.

Another path – Path 2 – has also been defined from experience. This is based on sale of scarce resources or cornering of trade services through geographical advantage or other strategies. Thus a capital base is accumulated and well managed through good governance, which then seeks to assure basic security through contracts for essential food or control of foreign lands for food production. With food supply secured, firm government will is then needed to redistribute wealth in the society. In these ways, both Path 1 and Path 2 might be called more-developed country descriptions of how some rich, powerful and equitable nations arose.

However, the conditions that allow such paths to be followed are not open to less-developed countries. If by chance, the conditions appear to apply, the development path does not seem to follow – for example, valuable mineral discoveries might be expected to allow a poor country to follow Path 2. But experience indicates that lack of social and political preparation often precludes sensible development. If we omit Middle-Eastern and other oil and mineral exporting countries from this discussion, we are left with less-developed countries that may follow such paths as described in the diagram as Path 3 and Path 4.

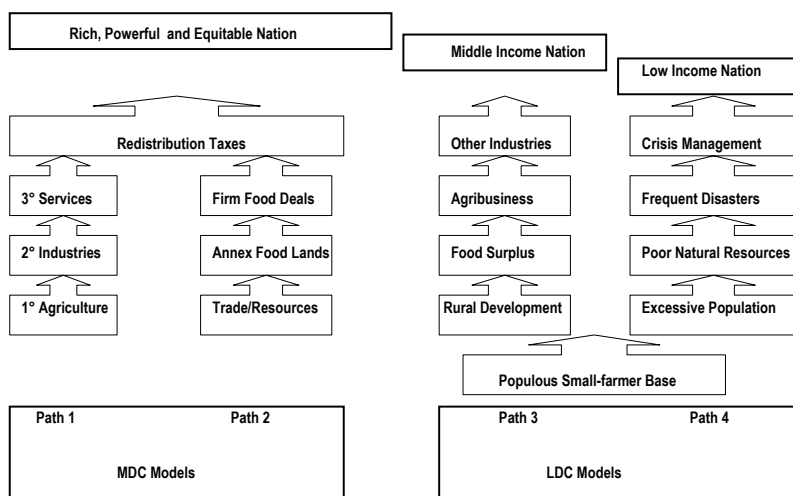
Path 3 indicates development from a small farmer base to ensure security of food for the nation and equitable access to social services by all citizens including subsistence small

farmers. Food surpluses are used to generate agro-industries in the manner of Path 1 and these may in turn lead to other industries being developed. Why does this not automatically proceed to secondary and tertiary industries as in Path 1? The answer lies not in the development model but in the reliance on Paths 1 and 2 on international trade and hierarchical relationships, which keep later entrants in a subservient position. This Path 3 leads to 'Middle Income Nation' status, unless by a quirk of geo-politics or luck a transition to Path 1 can be made.

The final example of paths of development – Path 4 – for a less-developed country begins again with the small farmer base, this time with a surfeit of population and poor natural resource endowments. Add to this, natural disasters in such areas that are typhoon or earthquake prone, for example, and much of government's role might be seen as crisis management. Such a scenario locks a nation into 'Low Income' status.

These four examples of paths are not exclusive. Nor are they exhaustive. They simply provide an indication of the need to focus on each development situation rather than apply preconceived notions of development needs and models. The overall lesson of the diagram is contained in its heading – there are only two development pathways to become a rich, powerful and equitable nation. Once the power is linked to wealth and social stability, such nations are able to maintain their dominance and so the opportunities offered to other nations confine them to something like Path 3 at best. At this point it is worth reiterating that food supply is always maintained in a secure nation – and it is worth recalling that all OECD countries have either surplus arable land resources or other means of securing surplus food, as well as acceptably good governance of course.

The Best (Path 1) and Second-best (Path 2) and Possibly Another Way to Become a Rich and Equitable Nation



The paths in the model are simplistic and should not be used for more than the above description. It allows discussion to proceed to the next stage, which is the critical aspect of attitudes to development. As an introduction to that, I will go so far as to state that the pervasive worldview that fails to put food first in international development is counterproductive. This is not some new philosophical stance. In fact it can be seen as an expression of a well espoused philosophy – an expression at the most fundamental level of civilization for it concerns security of the State as repeatedly demonstrated through history, and security of the individual over food as a life and death matter. It is obvious that this needs to be redressed; that it hasn't been is simply a reflection of the same roots as its causes. I do not seek to change the system – others seem more optimistic about that – and in any case I see that we are all part of it. No, I seek to make an adjustment that is in our own interests. As the late Derek Tribe would have put it, we

‘do well by doing good’. We would do well to forestall the international mayhem of conflict and migration fed by starvation.

Others, such as Bourdieu in *Le Monde* have grouped arguments that the whole of neo-liberalism has set rich countries on a path to destroy community values and State functions in order to allow free reign to the market and those with capital. He sees the consequence being a non-functioning society centered on individual gratification. This could well be so, but to me this feels like another of those black-and-white arguments that are seldom realistic. While his ideas might include the middle-class and those who so aspire in rich countries, there are clearly very many who are not within that system in the world, and many who have opted out. More likely we are living near the extreme of a pendulum swing that will soon be pulled back past a balanced position, and then, if we learn nothing, to some other extreme. This book aims to reduce the unnecessary long-lasting damage to the human race that may accrue from the current extreme that Bourdieu has described. Nevertheless, at least this argument highlights the issues, which is more than the arrogant one-sided intellectual statements and the ignorant reports of decision-makers of aid to poor countries.

The Arrogance of Ignorance

In an earlier book on ‘Thai Agriculture’ I quoted an haiku from Klausner that illustrates the separation of the elite urban educated society from the source of their food and the lives of those who produced it.

*sitting on top of the rice heap
marveling how distant peasants toil*

Thailand in this respect differs little from the few other major

food exporters of the world. And this may be the source of the ignorance that has crept into our imagined ability to enhance the welfare of poorer countries. It may well explain how we can accept without batting an eyelid the travesty of promoting bio-fuel crops in place of food crops. Only the myopia of luxury could lull us into a bio-fuel program that would have consumed something very close to the current total annual world rice harvest of 400 million tons by 2020. Fortunately common sense and alternative technologies look like reining in this madness.

Of course, well-educated agricultural scientists will then recall Ester Boserup's sound observation that technologies change the efficiencies of other factors of production. The possible future use of non-food cellulose products for fuel production is a relief, but it is not the point – for the interval between the subsidized food-substituting bio-fuel crops and the arrival of new technologies is the period when food risks become unacceptably high. This is what occurred in 2007-8, when drought further reduced cereal availability leading to poor urban dwellers being unable to afford the raised prices; starvation and life-disabling malnutrition occurred, although this time away from TV cameras. Food theft, once associated with the type of petty theft that led to exile from the UK to the USA or Australia is now rife and practiced strategically, for example, by midnight crop raiders, rustlers, poachers and pirates violently taking fishing boats and their catches; but all that is equally unnewsworthy.

Our ignorance of how and by whom food is produced has made us even more gullible. Somehow the public messages of increasing incidence of droughts and climate unpredictability are supposed to not impact farmers in poor countries. That is small farmers who are already subject to continuing economic disincentives, reduced access to water,

land, energy, fertilizer and new technologies, and increased regulation that further reduces their meager and uncertain returns from corrupted markets. Those who know marginalized small farmers confirm that their priority is feeding their family and after only that selling any surplus for the benefit of the family – in fortuitous cases this means health and education. If informed opinion is used to arrive at consensus – as seems increasingly to be the case for public communication – I think that informed persons would elicit that same policy prioritization: survival food security, basic health and education. For a society purporting to be concerned with development, knowing this and ignoring it is at best sad; for many informed persons involved it is clinically depressing, sometimes seriously so. It is not for want of information, nor for want of reading skills – one wonders whether it is a deliberate ignorance, or have the benefits of reading and writing have not been fully conveyed to the masses?

Gutenberg's Legacy of Ignorance

When Gutenberg launched modern mass media with his movable type, many of the initial publications were religious in nature, for that was both the powerbase and the mood of his day. Such an observation provokes thought about means by which we may consider today's powerbase and mood about the major issue threatening our privileged lifestyles. I see that the major issue is not chattering about water, environment or financial markets in rich countries but basic food security for survival in poor countries. If a group feels insecure about food, such issues as conflict, anarchy and migration assume an importance not yet contemplated. I therefore find it very curious that today's media betrays its purported independence and portrays a trivialized religious-like belief in Western ability to manage such an issue. Such is

Gutenberg's legacy! And it is instantly confirmed to me as I sit in Place de Gutenberg reflecting on his bronze likeness in Strasbourg, where his once grand site is trivialized by knick-knacks, a carousel and a car-park entrance.

But it is not just the Strasbourgs of the world that incubate this ignorance – it is the New Yorks, the Bangkoks and the hundreds of multi-million person cities of China and all their global imitators. It has been well said that only an urban society could be so ignorant to assume that its food supply is secure. We forget the lessons of experience quickly, perhaps because those who starved did not write our histories. It is frighteningly similar to the walls of old Asian and European cities offering a sense of security until the same walls when under siege became a prison preventing the hungry elite from escaping to agricultural fields, or food from entering. Today the walls are less visible and food seems superabundant in 24-hour supermarkets. Guttenberg's legacy is more likely to be a celebrity cookbook than an expert comment of global food policy for survival.

Is this important? Some of my colleagues argue that it isn't, because it is the same as most major issues on which mass literacy is used to manipulate more than inform or educate. This is used as a justification for dismissing the misreadings of the chattering classes. I would like to think that way too. But I cannot, because it is wrong – not just wrong in some idealistic sense of democracy for that hardly matters to the souped-up masses who long ago forfeited their birthrights for their mess of choice. It is wrong because it ignores the undue influence of Western urban dwellers on their nation's attitudes to, for example, food supply in poor countries. This gives rise to some ignorant columnists writing such non-sequiturs as; 'if those countries would govern themselves like we do, then they would be food secure like us', or 'large

efficient agriculture feeds us all so why don't they modernize their peasant system like we did'. I cannot know, but I have the feeling that Guttenberg would not have lent his moveable type to such types.

It becomes even more wrong when we observe that modern urbanites live in a state of fear that is exploited to manage their behavior. It is not only the obvious bogies of terrorism and random violence that induce fear, but everyday concerns that can be conjured out of the ether to water daily chatter. I live mainly in Australia where most urbanites have been drenched with wet arguments about water shortages without even a sprinkling of knowledge being added about water sources, qualities, serial uses or even self-reliance. Perhaps, the resulting ignorance may still produce benefits, but when it is filtered through the assumption that superior wealth equips one to offer advice, we find similar PR messages infiltrating aid agency agendas. 'Our ideology must surely be the best, since we have become rich through it!' This then influences Guttenberg's legacy in the form of thick politically correct aid memoirs.

We Know Best – Free the Food Trade

The great legacy that is recorded history accelerated after Gutenberg placed the power to influence world events in our hands. So our ideals become reality – at least in our minds and we then apply these ideals to others rather than to ourselves. The clear conviction that being born into a heavily-defended Western nation produces a vital view of world realities that fuels Western development preachers to laud the glory of 'open trade' and 'improved purchasing power for the poor' so that all 'may have the means to buy adequate food'. I have lived the life of such development

rhetoric and seen its lack of effect. I have also seen huge benefits from agricultural aid.

Rather than leave this tangent with the possibility of being misinterpreted to mean that economic advice has been less successful than technical, which is not what I have seen, I refer to Easterling's personal exposé of the lunacy of both grand and band aid – the large lending agencies and the celebrities who have long made their own poverty history. While he doesn't say it as directly as that, he shows conclusively that real development comes from 'searchers' of solutions to critical and often life-and-death problems. In the world's food supply, small farmers are the great searchers. Compared to them, researchers are part-time hobbyists with a gourmand's menu card.

Good food security policy allows both small and large farmers to innovate. Those of us who have led such fortunate lives that have taken us into the food farms of war zones, communist and fascist regimes, 'basket-case' countries and emerging economies among other eye-opening experiences have seen food production innovation at its best. Driven by necessity and opportunity, such systems are distant from formal researchers and extension workers. Necessity for urban food production may arise when food supplies are cut, as when the privileged inhabitants the ancient castle on the hill found their status reversed to that of hostage. Cities in socialist Eastern Europe often ran short of some foods. Yet in those times, I like others in my field, could see that managers of State Farms ate better than their urban comrades and indeed better than many in Western Europe. Innovation in management systems kept some State Farms going after political change, and surprised Western ideologues.

Eastern Europe maintained social order through its own brand of fear, yet there are always limits. When urban dwellers cannot access food – regardless of the political ideology that employs the police and military – their anger finds ready allies and quickly becomes mob violence. The cost of maintaining food supply lines can quickly exceed government reserves and inflate food prices, producing the same dismal outcome. This is why historically educated experts more than vocationally trained politics or finance functionaries staff good governments, for an education in history provides the context for policy. It continually informs that no policy has any chance of success unless it can be enforced and the populace feels secure. It clearly reminds those in power that food policy is a priority of national security.

As I write, the recent dark financial crisis continues to show through the hastily hung wallpaper, and so offers a simile for our neglect of good food policy. As *The Economist* magazine noted, the financial crisis produced ‘near unanimous support for ... bigger capital buffers’. It has taken a crisis to produce a common view that financial reserves should be able to withstand risky transactions. The fact that, in the West, the financial crisis overshadowed the more serious third-world food crisis of 2008 already shows our selfish preoccupations despite our humanitarian rhetoric. That food crisis would have been mollified if food reserves had been maintained. But the same illogic that promoted financial investment without the backing of financial reserves had been preceded by Western advocacy that poor populous countries should sell off their food reserves.

From the Pharaohs to WWII, food reserves have been critical to political stability. Now in a world of hitherto unimaginable numbers of people and increasing uncertainty

of climate and hence reliability of food production, any sane person would expect food reserves to be a central concern of government in a food-deficit country. This was the case, until an incomplete understanding of economics – economics devoid of history and behavioral disciplines – encouraged sale of food reserves to reduce national debts. It is an immoral agent that allows experimentation on a people; that conclusion from WWII is reinforced daily today in laboratory ethics and politics, yet it somehow escaped scrutiny in the halls of development agencies and the economics faculties that served them. Fortunately wiser council prevailed outside Western-influence and food security has been better managed in such countries as India and China.

To arrogantly claim the seat on top of the rice heap on the basis of financial success and to then use media control to proclaim a belief system offering a share in luxurious lifestyles is delusional. But by so doing, Gutenberg's legacy has been despoiled. But just as his invention of movable type was predated by a similar Chinese invention, so many answers to the issue of food security and world stability may be seen in China. To remain as a world power requires a secure food base; this has always been the case and always will be. When urban dwellers feel secure and then feel that they are becoming wealthier, developing an international power base is somewhat easier. Just as all great powers in history have followed this route, so is China with its 'food first' policy.

Let Them Eat Brioche

China has lessons to teach the world. Two decades ago it was seen as a population out of control with an inadequate food production system. Now the population is multiples higher and it exports food. Yet the ugly head of arrogance is still

raised in criticisms of its success and its policies. Arrogance may be detected in such statements as 'we manage our own food and population so why can't they' (I present a mild version of such views). And again we see ignorance as the cause. Of course, university-trained development specialists have more knowledge of the situation, yet they too are not exempt from assuming that food production in poor countries will follow developed country models. 'Let them modernize agriculture – get rid of small farms and use large tractors, fertilizer and forward-pricing like rich countries' is all but said in reports of most development agencies.

All this is no different from the apocryphal adaptation ascribed to a certain empress of Rousseau's 'let them eat cake', when advised that the peasants were starving from lack of bread. That bread shortage led to conflict that cost 500,000 lives and provoked civil war with more massacres – The French Revolution. Ignorance is only bliss before its consequences appear on one's doorstep. We recall the quip, but not the message. Yet the message is frequently repeated for all who forget. For example, food protests developed into civil war and nine million deaths between 1917 and 1922 – The Russian Revolution. Julian Cribb in his 'The Coming Famine' links these food created conflicts to Hitler's redefinition of lebensraum to include expansion of German lands to ensure food security.

The basic instinct to secure such bread bowls in Europe and the New World reflect sound food policy as a primary objective for secondary and other industrial development. Yet such history has been neglected – this does not mean that rich countries are in danger, but it does mean that a generation has grown up without a balanced historical foundation to their professions. This ignorance has emboldened development advisers to encourage developing

countries to mimic the modern West. Thus they promote urbanization in favor of farming – as if urbanization needs to be encouraged! And so are created the conditions for conflict as de Soysa and Gleditsch illustrate in their global map highlighting concurrence of food deficit and violence, which implicates food insecurity as a primary risk indicator for conflict, as presented earlier.

Non-Revisionist History

History is slanted variously according to its authors' purposes. For that reason, the above approach of seeking correlations is instructive, as defined events can be linked to each other. Informed observers such as Cribb know that correlations do not indicate causes, but their knowledge of events allows an informed assessment of when food scarcity is a cause and when it is an effect of war. The Anglo-Saxons erect war monuments 'Lest We Forget', yet the lessons of that heritage seem to have been lost.

Those lessons might be seen as culminating in the New World. And one could argue that that the New World's version of its own history of successes has unduly influenced modern development policy and hence much of the poor world. The New World cast off many constraints of its forebear Europe and developed its new territories, a model copied by all peoples but in this case in association with science and technology. This ultimately became the unquestioned model for international development in general. Yet the New World was built on the lessons of European mismanagement of food security, of attempts to rely on trade to solve food shortages and of exploitation of small farmers and workers. This is no revisionist history – simply a presentation of what is commonly known and should be taught as a foundation to economists today. Take

for example the Irish famine.

We know that British denial of land and other rights to Irish Catholics forced the men to become itinerant laborers who thus had to produce food for their families within minimal work time on rented smallholdings. They relied on the new crop, potato, since it required less labor than grain crops, which in any case would have been requisitioned by Britain. When potato blight struck extreme hunger in Ireland was met by a British policy belief that open trade would resolve the crisis. Grain was made available but it was not affordable and this resulted in, as so eloquently named by Thomas Keneally, 'The Great Shame'. Some 750,000 Irish starved to death and some two million emigrated taking with them a clear vision of forever avoiding food insecurity. Students of differences between collective national unconsciousnesses might wonder whether it is just a coincidence that the destinations of those Irish were Australia, Canada, New Zealand and the USA – all nations that maintain huge food surpluses today.

This does not mean that New World development specialists have some greater insight than their European and co-educated poor country professionals. Perhaps they once did, but no longer. In the same time, the world has changed with more than half of its six billion population now living in cities. Some projections suggest that by 2050, some seven billion will live in cities. Cities require more food than small subsistence farms as a result of wastage in transport and processing, and of excessive and luxury food consumption by richer urbanites. The concentration of numbers in cities easily outvotes rural dwellers, even in the mock democracies of poor countries established as conditions of receiving rich world largess. Now we are seeing it in such forms as political pressure to reallocate water from food production to

meet urban demand. No experience has equipped anyone for this evolving scenario.

Water is as misunderstood as it is mismanaged. Common sense would suggest that a scarce and essential commodity be managed outside of an open market in poor countries. But as we have seen for food, influential advocates of markets advance an argument that, in the event of market failure, government intervention is acceptable. The theory is fine, but what is mere hardship when such an approach is applied to petrol for the second car is deadly serious if water is withheld from part of the populace. Reduced irrigation water leads to food shortages. History remains the best aid to inform economics of national, regional and global risks, and now such information is readily available.

Economic history has at its fingertips such statistics as the average area of food production per person declining from 0.45 hectare in the 1960s to a less than a projected 0.2 hectare by 2050. The discipline monitors land expansion such as China's buying or leasing of more than two million hectares in South East Asia as part of an explicit strategy. Likewise, it knows that the Middle Eastern countries control nearly one million hectares in Pakistan and maybe half a million in Sudan, where South Korea is said to have acquired even more. The South Korean corporation Daewoo is also said to lease more than one million hectares of Madagascar. It is popular to criticize such actions as 'land grabs' and it is easy to paint pictures of selfish exploitation. To evaluate the validity of such criticism requires good economic historical understanding, for such land control is following a model long developed by dominant countries and also points to real concern with national food security in the investing country. If the effort currently expended on criticism was spent on redirecting international agency focus to national food

security policy in the countries where land is changing hands, a better overall outcome is virtually assured.

A focus on food security policy would also return the discussion to small farmers who can operate in a world of expanding megapoli. History informs that most cities arose in fertile river valleys and deltas close to their food supplies. Continued expansion of cities has produced the almost unbelievable situation of the combined cities of the world covering the best farmlands to an area equivalent to about half of the USA or China. Add to this rich urbanites demand for recreational areas and urban designs that exclude agriculture and it makes Japanese subsidies to rice growers amongst skyscrapers and Swiss urban garden plots appear enlightened. History reminds us to include food production and storage in and for cities, but this is not a major subject in urban planning any more than it is in economics courses. It is this partial view that confounds international development to ignore reliable access to survival food and disorients the agricultural science that should be serving food security.

The State of Agricultural Science

To gain an indication of the moribund role of the sciences in world food production, a recent attempt to focus expert opinion is instructive. In 2002, the World Bank and FAO opened a dialogue as to whether an international assessment of agricultural knowledge, science and technology was necessary. After various consultations over the next two years, an aid dictum I first heard in what is now Ausaid in the 1970s was confirmed; the dictum – ‘any project once conceived will somehow proceed to implementation’. Other interested parties joined the group and through an unusual process some 400 ‘experts’ contributed to the thick five-volume report.

From the outset, the approach was biased, first by forcing agriculture into a subset of the UN Millennium Development Goals, and second, by the imbalance of 'experts' across countries, agencies and political agenda. In the first instance, accepting 'multifunctionality of agriculture' to mean that it can serve other MDGs biased the report to specific political agenda rather than food production and food security. In the second, the choice of scientists to formulate the report omitted most of the world's best informed and experienced specialists, though a few countries did field real experts. For these reasons, the attempts to compare the consensus report of the International Panel on Climate Change and this International Assessment of Agricultural Knowledge, Science and Technology are spurious.

The spirit and brainpower that fueled the Green Revolution, the zenith of our centuries for the noble field of agricultural science, is absent from the report. Put succinctly as argued elsewhere herein, food is essential to life, its supply is far from assured for much of the world, and its mismanagement is one of the most likely causes of undesirable outcomes that inevitably drag rich nations into conflicts, wars and mass immigration. The report is evidence that the past's inspiration has now expired.

The world is not yet at a stage when food security can be considered under a global management system, let alone left to markets. On the other hand, the division of the report into regions and countries is logical. While nation-states have autonomy, they have the responsibility to ensure food security for their peoples – but the report doesn't say that. Less logically it filters countries through a common template without acknowledging varying needs and different levels of food security, food self-sufficiency and access to food. Rather

than treat the primary role of agriculture as food production, and in poor and populous countries food for survival, its roles is spread across popular topics. Thus what should be food production is squeezed into such arbitrary themes as; development agency goals, bio-energy, biotechnology, climate change, human health, natural resource management, trade, markets, traditional knowledge, local knowledge, community-based innovation and women in agriculture.

My opinion of the report is based on experience. I was engaged on behalf of Australia to review it; it was gratifying that Australia did not endorse the report. Yet I also feel shame for my profession. The best that can be said is that the report unwittingly highlights some of the crazy actions in international food development. Actions that pour oil on the already troubled fires surrounding current agricultural policy for survival food security and small farming.

Those who have read any of my other work may think it incongruous that I would not embrace the report's multifunctional approach to agriculture since it is defined in terms of interconnectedness and multiple outputs including environmental and cultural roles. I agree that this is a definition of agriculture, but it is not an espoused prioritization of needs. I also disagree with multi-focus approaches based on politically-correct subject areas being distilled by a consensus of variably self-selected partisans. One can quickly come to the conclusion that the report is commissioned and compiled by development practitioners seeking to maintain their budget lines. Rather than trying to emphasize the importance of agriculture under each of the international funding headings it would be more useful to consider the most pressing needs that agriculture can address. Then the interrelationships with other sectors and

political interests, food security and especially survival food security would be highlighted. The role of small farmers in current and future food production would then logically follow.

By contrast, the report studiously avoids biting the hand that is currently drip feeding it by following a bizarre list of issues in agriculture, viz: women, ethnic minorities, off-farm employment, economic growth, large and middle-size farmers, environment, health and social impacts of technology and regulatory frameworks. Only after these is the understatement made that agricultural science 'can contribute to radically improving food security'. Such downgrading of food security in the report confirms secure institutional sheltering from reality when we recall that it was written in the years leading up to a food crisis and large-scale starvation.

Let's be clear about the food crisis – countless billions of agricultural development dollars had been invested up to that time, yet a crisis occurred. This means that either, 1) the crisis would have been much worse if those funds had not been applied, or 2) the funds were mismanaged and a crisis resulted. Setting aside variations on these extremes, it would seem that the second is closer to what occurred. One probable reason is that international agricultural science and aid had been subtly yet inexorably shifted from their primary role in food security towards serving other political agenda. From this perspective the output might be seen as another 'more of the same' report, or as an indictment on agricultural scientists' professionalism.

It is at this point that I will, in all likelihood, be accused of hardheartedness in the manner of all who criticize the virtues of motherhood. This would be unfair. But it is much more

unfair to not apply knowledge to primary human needs. And that should come before addressing rights-based ideologies and new development fads. Enhancing rural livelihoods, poverty alleviation and natural resource management have been routinely lumped together with agricultural development without an agreed hierarchy to assist when compromises arise. This has encouraged a code of silence to emerge about what these three objectives entail. The common outcomes of this are:

(1) rural livelihoods are enhanced by off-farm laboring with the result that there is less input to farming and these and other exit paths from farming are encouraged;

(2) poverty alleviation when food crop prices are low leads development planners to advocate non-agricultural pursuits, and

(3) natural resource management objectives cast farmers and agricultural technologies as environmentally destructive.

This is very strange outcome for a sector purporting to develop agriculture, the prime function of which is food for survival.

Food security is mentioned in the report, with its essential components of sound policy, food stocks, market intelligence, distribution and access. But the subject then fades into a list of activities that is remarkably similar to the funding requests of the current research community. It is not that the list is wrong, just that it does not address food security policy independent of free trade ideology, and it underplays the huge potential of small farm food research. The reason? A skeptical researcher might comment, 'let's not rock the boat on the precariously volatile waters of international agricultural research funding'.

In fact the situation is much worse. The informed commentator, Julian Cribb, has eloquently described the

catastrophic exit of skilled scientists from the sector; his words are quoted in a later section. So we read in the report that food security policy is about diversifying diets, improving micronutrient intake and funding more-of-the-same research. It is not that these ideas are wrong, just that they are partial, biased and neglect priority issues. If this purported 'state of the art' report was to be believed, agricultural science should not be primarily concerned with food security and should not emphasize small farmers. Nothing could be more wrong.

Institutionally Marginalizing Small-Farmers

Biases in institutions concerned with international agricultural development need not be as glaring as that mentioned in the preceding section. Yet they have their effect. For example, the 2001 International Food Policy Research Institute report on global food, which contains rich analytical detail, blames slow increases in food crop yields over recent years 'undoubtedly' on small farmers who 'diversify production to reduce risks and income variation'. It is thus suggested that they cannot share the benefits of economies of scale. This may well be true, but those benefits arise from research oriented to large-scale agriculture, and the benefits are in terms of efficiency of use of labor and capital. These type of analyses seldom look at potential yields per unit of land in comparable environments, yet countless studies have indicated higher yields from small farms. But to conclude that large farms suffer from diseconomies of scale in terms of yields would be seen as silly. Even the term 'economies of scale' seems to have been captured by large-ists and is seldom used to mean economies of small scale, despite the equal applicability of the concept.

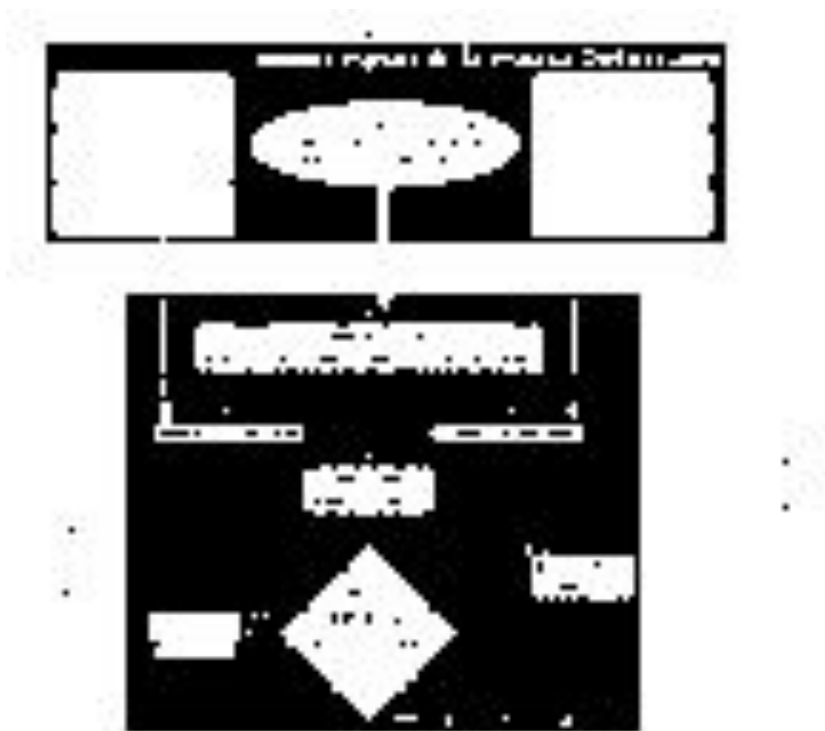
Furthermore, if the same research input had been made to

small farm agriculture then greater benefits can reasonably be expected to have accrued to that system. An output of such research might, for example, be cooperative activity that offers economies of large scale where relevant while retaining the benefits of small farm intensive labor. Evidence abounds, such as the Integrated Pest Management system that was developed by just this approach to use higher levels of technology combined with intensive observation of pests. The outcome was improved pest control through a combination of traditional practices and new pesticide technologies on small farms that used lower rates of pesticides to produce higher yields than in large-scale fields.

The abovementioned report also notes that African small farmers use improved inputs when the investment environment is appropriate; the observation applies even more to Asia. So it seems that research oriented to small farmers in their chosen approaches is already implicit in these observations by the experienced researchers. Yet it is somehow possible for IFPRI to conclude that ‘smallholders must move more rapidly from subsistence to commercial production’. As discussed earlier, this may be possible for a proportion of small farmers, but certainly not the majority and use of such a shibboleth is a non-sequitur, invoked like a fundamental mantra without critical thinking.

Much detailed thought over decades has gone into the development of the IMPACT model of the International Food Policy Research Institute. It is probably the world’s best overall analysis of global food supply and demand. It is an economic model, and as with all models such as that of IPCC for climate change, is primarily an hypothesis and communication tool that is constantly being refined by new data and new knowledge. Nevertheless, the model is more commonly used for predictive purposes, which seems

inevitable, as it is the best source of integrated information. However, there are distinct limitations. Firstly models are always incomplete, supported by assumptions and designed according to a common worldview. In the case of the IMPACT model, this translates demand and supply into trade and prices, as indicated in the IFPRI website diagram below, which omits direct reference to non-monetized food and so omits much of the poor world's production.



Subsistence and bartered food can be assigned prices and volumes to fit into the trade figures of the model, but this leads to malnutrition being effectively defined as a failure of trade to meet food demand. This is true within the

worldview of the model and may serve international dialogue in the UN family of institutions – but this book is questioning the continued utility of the overall approach. In addition, the model is not concerned with sources of food within a country and so is not oriented to informing discussions that seek to expand broadacre farming in place of small farms in poor countries. Yet it is used for that purpose, as we have seen in the above paragraphs. This would not seem important if it was just one more academic approach that is tested intellectually to inform a combined understanding. But it isn't used in that way – the worldview behind the model is assumed to be that which is appropriate for global food production.

Such unconscious undertones in international dialogue produced anomalous statements of the recent food crisis. Free trade was advocated as the principal means of meeting an absolute deficiency in food. It seemed to assume that additional food could be conjured up overnight. The agricultural economists who first conceived the model were well aware of the cycles and risks of food production, and would presumably have interpreted the situation as market failure, which allows the rules to be interpreted differently. But such subtleties seem to have escaped the education of institutional users of the information.

To make such models useful in a world of busy users, it will be important to plug the educational gaps of a new generation of economists and development specialists that have not spent significant time on small farms in poor countries. One means of doing this is to focus on survival foods in a model separate from general traded food production and to then overtly show the different food producer categories beginning with the small farmers who produce the bulk of essential staples in poor countries. Small

farmers could be broken into categories of subsistence, semi-subsistence and commercial. If this sounds like one more cosmetic adjustment to an already indulged fraternity, I have not been clear. So let me say it another way: a cadre has gradually developed in influential circles with little inkling of essential food production cycles and the overwhelming importance of small farmers in poor country production of basic food essential for survival.

Another way of looking at this is to highlight the differing emphases and needs for poor country production of survival foods, as is discussed in the following section.

Changing Emphases in Food Security

Not biting the hand that feeds extends beyond the examples discussed, as can be seen from the diagram below, which describes development factors considered important in the past, present and future.

In the period of the Green Revolution through to say the early 1990s – many practitioners would say the 1980s – issues of critical importance included; food reserves, small farmers, research, yields, crop area expansion and development institution commitment. The results of this combination are here today for all to see, in the form of an ever rising population being fed. However, it was not perfect – just very, very good – almost excellent for a Manhattan-project style commitment of scientists and informed administrators. Hindsight allows us to note that factors of medium significance to that approach, such as local capacity and government commitment, could have been emphasized in a more productive manner. Yet allocating the same medium emphasis to broadacre farming proved prescient, and was

informed by practitioners who had solid field experience and knew the productive potential of small farms.

In that golden era of international agricultural science, such factors as trade, bio-fuels and politicized climate change that today command high priority were insignificant. Similarly water issues, private sector inputs, foreign land control and supermarkets were not really considered. It is not that these issues were not present or at least emerging, it is more that prioritization of inputs was based on a clear perception of the task – increased production of staple foods in the poor and populous world.

Today, the highest priority seems to be allocated to politicized concerns, which inevitably are those nominated by rich countries. Hence free trade, bio-fuels, broadacre farming and climate change occupy much discussion. In the case of free trade, discussion is fueled by ideology on one side and concern for the continued viability of current food production on the other. For bio-fuels, discussion is powered by demands for oil substitutes on the one hand and deep concern for the loss of food production resulting from subsidies for bio-fuels on the other. Broadacre farming has risen in importance by such partial arguments as that discussed in the previous section that claim economies of scale without justification. Climate change as an international concern of the era has long been part of agricultural research through its accommodation of natural variations in breeding and management programs.

Currently however, climate like other politically entwined concerns is confusing efforts such that food research in poor countries may be re-oriented to CO₂ mitigation in place of securing essential food. Some claim that there is a carbon sequestration benefit from small farms; if so, it is

overwhelmingly important to view this as a bonus and not the primary objective, which remains as ever, basic food production. With that in mind, one can then consider, for example, carbon mitigation through bio-sequestration as a new form of investment for small farmers that would increase yields through improved water-holding and cation exchange capacity from higher soil organic matter.

If its not carbon, its biodiversity – and as Hugh Possingham’s group have reported in *Science* last year, there are always trade-offs. Those between atmospheric carbon reduction and biodiversity point to the obvious need to select actions that give the best overall outcome. It is a difficult political task, but a better outcome than insisting on the best for carbon or the best for biodiversity. But ahead of all such considerations, food production should be the deciding factor.

Factors that are more directly related to survival food production seem to be allocated only medium importance; such factors include yield increases and small farmers. This situation is regrettable. Other factors in this middle category seem to be emerging political issues, such as water competition, foreign land control, supermarket buying power and a belated recognition of the private sector. Government commitment continues to be allocated less profile than seems appropriate.

The relative unimportance attached today to such matters as development agency commitment, food reserves, research and local capacity is a serious matter. Each of these is important yet currently neglected. It is as if we are wandering in the wilderness searching for an answer – yet the answer was known and remains known to a faithful remnant. I don’t want to simply say that each generation

must learn its lessons the hard way – civilization is defined by avoiding such pain! So I say that agencies need to focus on survival food production in poor countries – it is really their *raison d'être* – it is not sufficient to claim that this is catered for through agricultural, rural and natural resource management, or even from general food production. The role of survival food stocks as reserves against poor harvests needs to be re-emphasized and modern management practices adapted to poor country needs and capabilities. Focused and improved funding for research has been discussed elsewhere as looming hole in our defenses against starvation because it has long lead times in training intelligent researchers and then in developing new technologies. And local capacity should always be a priority to enhance relevance of development and to build self-sufficiency.

From such a discussion of a relatively golden age of the Green Revolution through the current wilderness of entangling issues, suggestions as to what is critical for the future is straightforward. Priority foci include; research, yield, water competition, food reserves, private sector engagement, government commitment, enforcement of regulations, local capacity and small farmer focus. These matters are discussed in respective parts of this book and do not require further elaboration here.

Matters worthy of medium level consideration include:

- trade – to ensure that trade in non-essential foods does not compromise survival food security;
- broadacre agriculture as a complement rather than an alternative to small farm agriculture;
- supermarkets for potential links to the proportion of small farmers with commercial potential and

- protection of other small farmers from risky credit or cash crop production;
- climate change – not in a way that further compromises small farmer production but as a means of catering for possible impacts, such as sea water intrusion into productive delta regions; and
 - development agency commitment – as mentioned for the past and present but in future also as a specific commitment to ensure so far as possible that survival food is a first priority of poor country development.

Other factors that can be relegated to relatively low importance include foreign land control. Rather than allow sovereignty and rights arguments to divert focus from food production, the subject may be treated equitably as part of rich country company investment in poor countries. Other benefits should also be acknowledged such as the extra capital investment in agriculture. This may be contrasted to past and present development agency failures to deliver large and useful investment to many poor countries, especially in sub-Saharan Africa. Bio-fuels seems likely to fade from the agenda with the prospect of both more sensible US policy and advances in technology to use waste products as bio-fuel substrates. Crop area expansion is reduced in importance by the low availability of new land although expansion into protected environments and into urban areas will become logical developments that may well occur without the need for special focus.

These points are all summarized in the diagram, which also allows comparison across eras and degrees of influence on real international food security for survival. It points to lesson from the past showing a wiser path for the future.

Variations in Relative Importance of Factors Influencing Food Security over Time

	Green Revolution to 1990s	Present	Future
High Influence	Food reserves Smallholder production Research Yield Crop area expansion Dev't agency commitment	Trade Bio-fuels Broadacre production Climate change	Research Yield Water competition Food reserves Private sector Government commitment Local capacity Smallholder production
Medium Influence	Local capacity Government commitment Broadacre production	Yield Smallholder production Water competition Foreign land control Supermarket power Private sector Government commitment	Trade Broadacre production Supermarket power Climate change Dev't agency commitment
Factors ignored or allocated low priority	Water competition Private sector Climate change Bio-fuels Foreign Land Control Supermarket power Trade	Crop area expansion Dev't agency commitment Food reserves Research Local capacity	Foreign land control Bio-fuels Crop area expansion

Conjuring up Wisdom

In taking extreme care to not bite the feeding hand, practitioners have become accustomed to reduced rations, and distracted by the novel morsels of development regime fads and so have not noticed the sleight of hand that has marginalized food security and small farmers. Thus, as if by magic, the critical matter of ensuring sufficient basic food has disappeared – not tasty, not fully-nutritionally-balanced (that comes once all are well fed), not World Food Summit foods-of-preference – but essential food for survival. It is no illusion – it is a reality that ensuring the survival of all persons in the world is the greatest trick if we can pull it off. Then we can talk about other refinements in life. That juggling act was performed during the Green Revolution and produced needed extra grain, and that remains our grail as we seek our new Merlins.

It is logical to focus on grains since these provide the overwhelming majority of calories to humans. And in case

the preceding is interpreted to mean that balanced nutrition is too hard to contemplate, further consideration of small farmers is again warranted. For their mixed farm-gardens include vegetables in addition to their major carbohydrate or grain crop. And as The World Vegetable Centre points out, vegetables can be a major source of cash income for small farmers, often being the step between subsistence and sales. Is such a win-win outcome wizardry? No, not at all. But it does make the artificial multiple outcomes of traded food approaches even more misguided. Recognizing the benefit of preventing micronutrient deficiencies among small farmers and their clientele would lead to redirection of existing investment for better outcomes. We know that returns to agricultural research investment are extremely high for those who do not seek to put the returns solely into their own pockets, and among these, vegetable research consistently yields the highest of all.

Small farmers know the balance of life's foods; first comes staples of grains or other carbohydrate crops and these are supplemented by vegetables. Yet, the fact that essential staples have not been retained as a focus but mixed in with generic food – processed, luxury, choice-foods etc – has allowed unnecessary and unethical confusion. Thus free food trade is argued strenuously to apply to all food by many free traders. It is not that these persons are hardhearted – it is just that no-one is providing a separate consideration of food essential for survival. Why? Because such food is often outside the monetized system. It is surplus small farmer food that can be a tradable commodity – but even then, the poor of local urban areas deserve feeding before international markets do.

Separate consideration of these types of food leads to separation of food producers into subsistence, semi-

commercial, and small commercial and large commercial farmers, each of whom have critical roles to play in the ongoing precarious game of survival and for some, comfort. With such wisdom, we may again encourage the Magi and learn from the East, for in China, for example, food has been government's guiding star for decades. Yesterday, success in development was thought to be an output of good governance, but today we know that ensuring basic survival food security is a necessary foundation stone to the edifice of good governance, as the next chapter details.

Chapter 6

Good Governance starts with Food Security

All actions have consequences. Irving Kristol expressed it as no social action escaping the law of unintended consequences. This is why most well-intentioned policy is fraught with failure if its contingent consequences are not considered beforehand. It is also why Kristol himself eschewed ideology, for it 'preconceived reality'. How much worse then must be the contingencies of ideologically-based policy. This is the situation for food security and small farmers today, when policy is based on ideologies of food trade and large commercial farms, albeit with the best of intentions. Policies, plans, projects done in this way contain the seeds of their own destruction.

Why Agricultural Development Planning Fails

The best laid plans of mice and men make God laugh, to mix cultural images. The rich countries, despite the self-effacing words of The Paris Declaration, influence agricultural development plans unduly. Those in rich countries seek to help and being rich, allocate large sums to development in poor countries because this makes them feel that something is being done. What is being done is defined in a plan, made by the children of other well-intentioned rich people employed for that purpose. But such plans are just an extension of the colonial 'White Man's Burden' according to Easterling's insightful exposé of international assistance. He quotes the Marquis de Condorcet to paraphrase still reigning attitudes – 'these vast lands need only assistance from us to become civilized'.

There we have it; well-intentioned assistance fueling the arrogance of ignorance, and on a grand scale. Involvement of recipient government personnel in the plan does little to inform it because such personnel are inevitably trained in universities that have adopted rich country models. They are the new middle-class of poorer countries and like their rich country peers, they are often unaware of what they don't know. Compounding this planning breakdown is the usual insistence that a recipient government move towards democracy, which is usually interpreted to mean elections. Those other values and systems of democracy that took rich countries centuries to adapt to their respective cultures are assumed to follow elections after a few short years. With parliament composed of the old families and government agencies stocked by the new middle class, poorer agrarian segments of the country grow restive. Inequality fuels conflict, and it should be instructive to agricultural development planners that agrarian revolts are the most common source of attacks on pretend democratic and non-democratic governments. Current rumblings in Thailand include this element.

How have we fallen into this trap of planning centrally when we once railed against the ineffectiveness of Centrally Planned Economies? We have done it by deluding ourselves that we are being 'participative' and 'inclusive', when we are actually being patronizing and prescriptive. Little has changed in the 30 years since John Leake, who kindly reviewing a draft of this book, observed that agency briefs to 'advice and assist' could more correctly be described as 'devise and insist'. This is because little has changed in agencies since then, as Easterling shows in a presentation of US, UN and World Bank statements across four decades. What has changed is increased marginalization of these

agencies, especially the UN, which with reducing budget and professionalism produces mainly papers, many of which may not even be read by anyone beyond their authors.

Planning is the common element of repetitive failures in development fields wider than agriculture. Analysis of governments that have collapsed or completely failed indicates an apparent correlation with successive IMF programs. Easterling associates this with the same type of plan being applied by outsiders such that programs were 'ill matched to such ill societies'. The idea of lending to countries that have neither met previous repayments nor implemented reforms seems similar to recent fallout from unregulated banking behavior closer to home. And in the same vein, forgiveness of debts and creditor agreement to 'take a haircut' after profligate lending has undermined credibility of the international development finance model based on large-scale prescriptive plans.

Lest we think this is only a recent outcome of ignorance among unblooded bureaucrats, we may compare the success of such externally planned approaches from the colonial period. While distinct infrastructural and some social investments were successful, a litany of agricultural failures also exists. This includes: regulating which crops could be planted; taxing non-compliant farmers; replacing local cottons with imported types and thus precluding food crop interplanting; irrigating saline soils; insisting on tractor use in labor rich regions; clearing non-arable soils, and so on. Once again the common factor was ill-informed large-scale planning – central planning in another guise.

Security of essential food for survival is too important to be left to such a flawed system. This is why individual nations, some of which are very poor, increasingly refuse to accept

the agricultural development plans of international agencies. Of course, poor nations are often obliged to accept what they need, but draw the line – transparently or when events suit – at letting an untested foreign ideology determine whether they will eat or not. The lesson for agricultural development planners is to be fully informed of local needs so that they can evaluate plans made by locals, not draw up plans themselves. And in a better organized world, the current policy void would be based on local plans related to survival food security and small farmers.

Causes of Policy Void

Local policies seldom exist in the form that is being discussed. Charan and Pakapun in their 'Sustainable Smallholder Animal Systems in the Tropics' talk about the absence of policies specific to small farmers and give examples of the problems this leads to. For example, well-intentioned subsidies on two-wheeled tractors to increase farm efficiency actually produce social problems in surplus-surplus rural communities as well as trapping farmers in fuel, maintenance and replacement costs. Draft animals may be slower, but many situations remain where they are the best-suited power-source as they are self-replacing, serve to stimulate biological activity and provide edible and other useful products.

Similarly, programs to introduce exotic breeds of dairy cattle locked farmers into higher costs and management inputs to maintain animals unsuited to tropical environments. Those Thai experts note that the absence of policy means that such 'good ideas' can proceed unchecked whenever it suits some other purpose of the sponsors. To involve marginalized farmers in 'get rich quick' schemes is worse than foolish, it is irresponsible and in terms of governance, delinquent.

The absence of a national policy for small farmers also allows them to be drawn into the free trade net where they are vastly weaker than the richer country's markets. Free trade policies are appropriate to the commercial agricultural sector, but in a poor country they do not suit small subsistence farmers or even some semi-commercial farmers whose priority activity is subsistence. Yet the absence of policy means that all farmers are lumped together. The ultimate folly of assuming that national interests will be subordinated to free trade ideals when food is in short supply is discussed in other sections. So let us turn to the absence of policy concerning technology leading to the largest waste and misplaced criticism of small farmers.

Technology is developed by experimentation by and for small farmers. While small farmers are the vast majority of the world's farmers and produce about half the world's food, research focusing on their production systems represents less than ten percent of global food-related research. And even this small proportion suffers from the 'we know what you need' syndrome of research design. Some technologies transfer easily across cultures and farming systems; many do not. Those that do not transfer well constitute a long and continually growing list, fuelled by well-intentioned researchers and organizations that think they know what is needed. So we have notorious technologies that increase hardships for women, that produce different and unmarketable varieties of crops, that lock farmers into the cash economy for fuel without giving them fair market access to sell their produce, that ignore cultural and traditional systems, that throw out millennia-old sustainable systems to introduce unproven irrigation systems ... and so on.

As Charan and Pakapun note, the dynamic is foreign to most researchers trained in the Western worldview, which means most accepted third world universities these days. Therefore they argue that farmers themselves must be involved in research for it to have a chance of being relevant. And even then it is subject to the vagaries of communication between a party ignorant about both the farmers and the environment (the researcher) and one naturally steeped in the environment (the small farmer).

Let's take just one instance of the disconnection that characterizes research. The common research approach seeks to isolate as many variables as possible to test the difference of the technology being studied from others. In a system that is much more complex than the extensive broadacre monocultures served by such research, small farms are vibrant interactions between diverse plants and animals including the farmers and their families. One shift in technology can have multiple ramifications in such fragile and self-balancing systems. For these and related reasons, a policy specific to small farmers in each country would aim to protect them from the whims of willful development experts, the exploitation of the avaricious and the technologies of the uninformed.

Small farm policy would also require such things as: conducting research on small farms and involving small farmers; trade policies excluding small farmers except where there are clear benefits to both the people and food production; and government departments and development agencies desisting from single-focus ideas hatched in environments foreign to the small farms. And this is just the beginning of good governance.

What is Good Governance?

Good governance seems to have evolved to be one more means of communicating Western values to developing countries. It is variously associated with democracy and the rule of law and is used as a basis for public sector reform. To many engaged in international development, good governance is automatically assumed to be a sum of such values as citizen participation, institutional transparency, efficient and sustainable use of resources, accountability within government, equity under the law and zero corruption. This well-meaning approach can only be either a distant aspiration or a pipe dream.

But effective 'good governance' does not begin with an ideology, be it democracy or any other. Nor does it begin with processes of government. It begins, as it always has since civilizations originated, with ensuring the essentials of life for the society. After that, division of labor and other devices of efficiency can produce other material goods or defense and so on. Then other pursuits that can enhance the quality of life, such as art and leisure may be encouraged. Every civilization has pondered the concept and arrived at this conclusion. The first essential of life is food for survival. It is therefore the first essential of good governance.

The term, good governance, arises with recent aid lexicographers seeking to explain why capital and technology did not automatically lead to immediate economic development. It had worked for Germany and Japan after WWII, so why not for poor countries? The objective was eventually seen to be noble but naïve, because poor countries lacked the governance understanding to handle development investment. In the process of weaving the clever communication threads of good governance to patch this hole in the development garment, local good governance systems stitched together across centuries were

ignored, or worse rent in twain. This agency view of poor country governments appears to have licensed development officials to add specific ideologies to the package, probably in good faith, as a means of explaining what they mean by 'good governance'. And so we arrive at such debacles as Thailand's façade of democracy being used to obscure bad governance according to traditional values, which were largely cast in Buddhist and Hindu terminology as 'righteous rulers'.

I mention Thailand not only because I know it well, but also because it is unusual. It is a major food exporter with a continuing strong small farmer base. Unfortunately those small farmers have no allies in government under either the Western or the current Thai views. But they did have allies in the traditional system, which even went so far at times to define non-warring periods during planting and harvest. Of course, this seems quaint today, but the principle is important – food for each society was ranked as the first priority, small farmers were encouraged to feed their families and supply a surplus to the state for redistribution. It is a common theme of human civilization.

If we take just one small step away from the assumed superiority of the Western model, we find governance systems that balance military, noble, religious and civil service powerbases to ensure that the basics of life are provided to all, and that those in positions of power gain privileges of office. This is a stark contrast to the description of good governance used in aid as introduced above: 'citizen participation, institutional transparency, efficient and sustainable use of resources, accountability within government, equity under the law and zero corruption'. These are quite different approaches and I cannot say either is absolutely right or wrong.

Small farmers' voices remain unheard in development's Ivory Tower of Babel. The assumption from Western-influenced officials, which now includes most of the senior civil service of poor countries, that the good governance package includes democracy is not different from the assumption that small farmers will fade from the earth as 'efficient broadacre agriculture modernizes the economy'. And the average functionary seldom thinks of national food security ahead of other development priorities. But it is different in some countries that do not follow the Western model.

China and India differ from each other in approaches and many other ways. But they also share important fundamentals such as each having long, rich and respected histories, and policies to ensure food security, to minimize rural emigration to cities and to improve the well-being of small famers. Cereal grain imports to China and India have been declining since 1980. The huge increase in demand from population growth in both countries has been met mainly from domestic sources. China's overall agricultural trade balance is usually positive and in the case of India, it has been a reliable food exporter since before 1995, exporting more wheat, rice and meat than it imported, according to FAO in its 'State of Agricultural Commodity Markets'.

That these two most populous countries of the world also export food is eloquent. I would go further and say that governments that can do this for more than a billion people at once know the principles of good governance. If we are to talk of future food production, and to realize the critical role of small famers, then we must learn from these masters.

Good Governance of Food

Governments set policies that impinge on food security and small farmers, yet neither form the foci for policy, except in countries like India and China. The ambit of the sector, redefined to reflect both society's and small farmers' needs, would include issues related to water, land, fertilizers, pesticides, agribusiness, domestic markets, distribution systems and food consumers. The overriding importance of food security in national stability and security for many populous countries will logically lead to an overt use of trade barriers and subsidies in some cases. Such transparent policymaking clarifies international understanding and progress in the current system of pretence and falsehood. This is no panacea, but simply a logical step forward in the dynamic competition to feed ourselves. If policy-makers don't pay attention to that, the rest cannot be of consequence.

Good governance also has vision. We have seen that an informed view of past and current essential food security includes small farmers in parallel with broadacre farming as essential to meet food demand. The future requires a vision that countenances threats and stimulates opportunities. We have seen that one means of doing this is to retain the knowledge and to encourage the creativity of small farmers. Another critical aspect is to support such knowledge creation through research as has been done well until the recent decade in international aid.

I expect some criticism for claiming that today's international agricultural research is not done as well as in the past. So be it. Many may not agree that, compared to 30 years ago, there is a lack of field experience among policy makers, that there is a tendency to focus on political fads of donors and major powers more than survival food security, that there is a blind spot concerning food production in wealthy nations and that

there a dearth of integrative scientific talent in university courses. But this is what I see.

And I am not alone. I expand Julian Cribb's words from his book, 'The Coming Famine'. 'For the past quarter century, the brainpower required to feed humanity has been shrinking in relation to the global population and its needs. In local field research stations, in national agriculture departments, in universities, colleges, and research centers, and in the international agricultural research endeavor, funding has been cut or allowed to erode, labs and field stations have been closed, and promising research programs have been terminated. Many of the scientists who fed the world have quit in anger, sorrow, or disappointment, have been fired, or have retired, while recruitment has fallen off. The powerhouses of agricultural knowledge—the United States, Germany, France, Japan, Canada, and Australia—have turned away from agri-science in pursuit of other technological El Dorados. A report by Alex Evans for Britain's Royal Institute for International Affairs says that between 1980 and 2006 the proportion of the world's aid budget spent on agriculture dwindled from 17 to just 3 percent.'

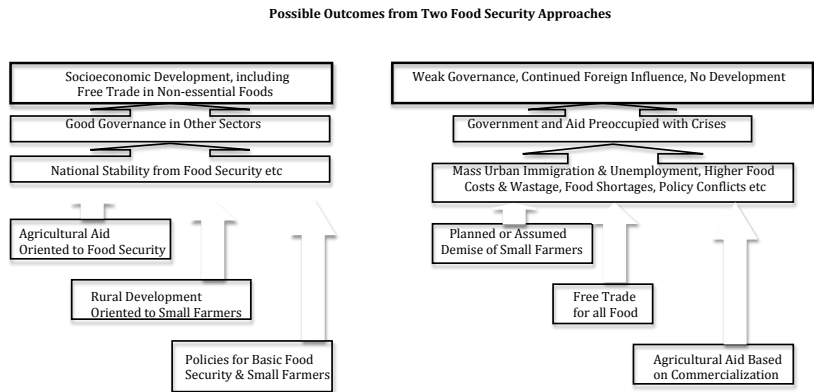
Good governance begins at home. The agricultural policies of rich nations may well be good for those countries, but they are food secure nations with protected high labor costs. The foreign aid policies of those same nations balance various factors of national interest, some with an humanitarian orientation, while also influencing the policies of international agencies. The last aspect of such policies is not addressed as seriously as the former parts, which would not be a sign of good governance if it impinged on national wellbeing. One might argue that aid is for a better world and helping the poor, but ultimately national integrity is the task

of national policy. From this perspective, allowing a decline in food security in poor countries is to increase risks of migration, conflict and worse – and this is the Trojan horse of bad governance that we have incipiently allowed through our gates by dissipating food security across diverse objectives.

Dissipated Security – Weak Governance

The effects of the ‘multifacetism’ that international agencies now require of agricultural development can be observed in countries trapped into being aid beggars. It can also be simplified into the two diagrams presented below. The contrast between the approaches indicates outcomes of either socioeconomic development or no development.

The diagram on the left indicates that agricultural aid and rural development are oriented to basic food security and to small farmers accompanied by policies that enable both to contribute to national security. The resultant opportunity of stability in an atmosphere of good governance allows, in time, socio-economic development, which may include free trade in non-essential food. This is the message of this book.



By contrast, the diagram on the right is closer to the current approach. Free food trade and commercialization of agriculture by assuming or even planning the demise of small farmers to allow broadacre farming is assumed to lead to economic development. However, even if it does produce some net economic benefits, which is unlikely, it has a high probability of producing massive migration from rural to urban areas of poor and unskilled persons, higher costs for food from the additional wastage inherent in supplying large cities, food shortages and conflicting policy objectives within government. In that situation government is preoccupied with the immediate issues of the day and has inadequate extra resources – human and financial – for longer-term development strategies. The outcome is not good governance but weak-governance, usually with continued reliance on aid and hence foreign intervention in policy and other decisions. A cycle of dependence.

The current approach is risky. Risky to the country concerned but also to neighbors and potentially to all countries, for weak governance is the incubator for conflict. Conflict may arise from food shortages, as detailed herein, or it may arise from neglect of food supply when factions vie for power. In the former case, good governance, once established, first ensures basic food security before embarking on other developments. In the latter case – where food adequacy is jeopardized by power struggles, conflict must be controlled and its threat obliterated from the minds of the people, as described in the following section.

Good Governance – Absence of Conflict

The element of trust is critical to good governance. Trust in this instance is earned and reinforced by actions. From a

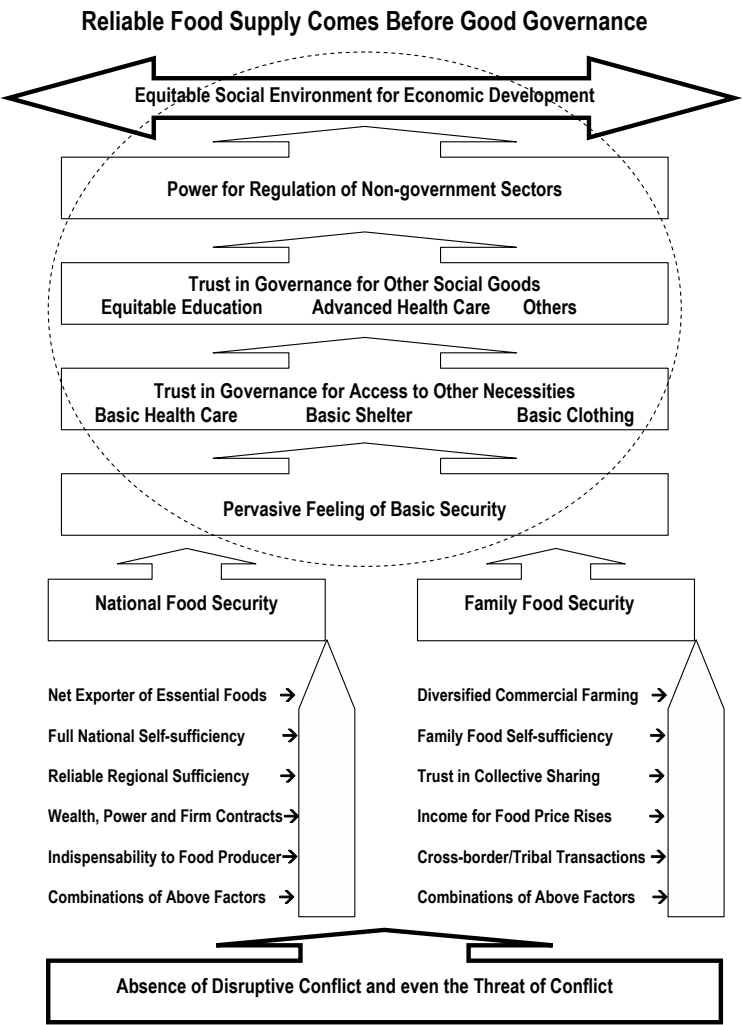
situation of quelling conflict, the role of good governance in allowing the evolution of an equitable social environment for economic development is illustrated in the following diagram.

Taking the example of an hypothetical poor country where the threat of conflict has been removed, the process indicates that both family and national food security – security of essential foods for healthy survival – need to be considered and fostered. In the case of family food, policies that encourage such developments as: appropriate and diversified commercial farming; family food self-sufficiency; trust in collective sharing; income rising in proportion to food prices; unimpeded cross-border and traditional exchange systems; and interactions between these and other operative factors. This is not an easy task and seems to have been most successful in situations where government has not decreed development by fiat but rather supports local developments as needed.

At the same time, fostering national food security in staples, requires policies that: encourage food producers with commercial potential to sell produce; enforce sales contracts; focus on regional food sufficiency; ensure the highest proportion feasible of national self-sufficiency in staples; and encourage local export of surpluses.

With secure national and family food staples a pervasive feeling of basic security – the psychologically secure state of ‘knowing where the next meal will come from’ – promotes a general feeling of trust in governance. Good governance at this stage then ensures the provision of the other basic services of health, shelter and clothing as needed, which paves the way for developments of equitable education, more advanced health care and other services. From such

consistency of good governance, sufficient power to regulate non-government sectors and control local elites accrues to government and opens the opportunity for further social and economic development. The hatched circle in the diagram surrounds these elements of good governance.



Such scenarios as the two preceding diagrams and their explications are exaggerated for didactic purposes. They provide summaries of what may be taking place in some countries and may be able to occur in many others with greater efficiency than from existing systems. If this is not widely recognized, one reason may be that the agricultural development of three and four decades ago was so fantastically successful that agencies have rested on those laurels and assumed that the same benefits would continue to accrue. This is just fantasy, as the recent absence of focus on basic foods for survival has left out this critical foundation to development – indeed to civilization.

Fiat or Fantasy

With poor countries often in the clutches of the development community through aid funds and finances, policies of their governments tend to reflect the wishes of the rich aid donors. This might seem fine for the common objectives of peace and comfort, but in the case of many poor countries the path to such comfort is the first role of good governance. Leaning on the laurels of past successes in food production and introducing policies that effectively undermine national food security is hardly good. But this ‘foreign fiat governance’ is not malicious just ill-informed. It allows ideological stances to influence agencies’ and hence governments’ policies. Fantasy may too strong a word for some, but for the current discussion about survival food security and small farmers, it illustrates the distance between policies proposed and poor country realities.

For example, success of past agricultural developments has produced a scenario where arguments of comparative advantage are used to discourage investment in food

production in marginal areas. It is assumed that it is more financially efficient to buy food for such marginalized persons when it is needed. Such a worldview allows such surprising questions as that discussed by Mark Rosenweig of the Harvard Center for International Development who asked 'Should Africa do any Agriculture?' If that was a real question, one wonders what would be the response for the less fertile areas of Asia that are currently feeding hundreds of millions.

A cursory look at India and China, each seemingly feeding their own one billion plus populations and also exporting food, negates such views. But it is important to understand how the Western view developed. The argument goes like this. Past agricultural development provided food, labor and some of the capital surplus that fueled urbanization and industrialization. With such other development, food production appeared to be guaranteed. It became of lower relative financial importance because its increasing efficiency allowed food prices to remain low. Responding to macro-indicators, government and in particular donor investment was attracted to sectors with higher apparent price potential, as noted by the World Bank in its 'Directions in Development' report. This had consequences; the declining investment in agriculture led to slowing of technological innovation despite rising demand. It also led to declining food reserves and to increasing unpredictability of production.

Generalized and non-specific food security plans proved inadequate in the crisis that ensued. Policies that in the 1970s had oriented increased production to food security had gradually been refocused on attempts to enhance farm income and rural productivity within assumptions of open trade in food. The impracticality of these policies became

clear when India, China, Bangladesh, Vietnam, Egypt, Nigeria and several other countries rapidly abandoned commitments to free trade in low-value essential foods when their citizens faced real shortages. This application of price controls, trade barriers and input subsidies for low value grains useful for basic survival, while roundly criticized by development institutions, indicated the primacy of basic food security to responsible governments. Primacy does not mean before other policies are put in place, but rather of primary importance to underpin other government initiatives.

In general, government investment in poor countries over recent decades has increased most significantly for education, followed by either defense or agriculture. As the largest sector in many poor countries, in terms of GDP and employment, investment in agriculture has possibly been the largest direct contribution to economic growth and poverty reduction. Nevertheless, agricultural expenditure in poor countries expressed in terms of agricultural GDP only averages about half that of rich country figures. Add to this shortfall the confusion between investment for food security and economic growth and essential food security for survival can easily be put at risk. Emphasis on rural sector investment for labor, human and physical capital, cheaper food, and markets in urban industrial and service development – all good in themselves – can distract from basic food security. Another example of gaps in good governance is in government functionality; for example, registration, re-registration and management of phase-outs of crop protection chemicals is a central role for government support of agriculture. Yet in the case of Bangladesh, only some 120 compounds are registered – many of which are specific to rice – compared to twice that number being registered in the EU.

Case studies in India, China, Vietnam and Thailand indicate that investment in agricultural research, education, and rural infrastructure has been the most effective public spending for growth and poverty reduction. As these are all food exporting nations, survival food security is implicit in their agricultural production policies – and if not, has been explicit in their reactions to the 2007-8 food crisis. These days, non-irrigated lands often offer greater yield potential because the high-potential irrigated areas have already been developed. Low-cost infrastructure such as rural roads has been shown to offer high returns in these areas, while urban growth programs and government anti-poverty programs do not appear to have been efficient at all. These findings from IFPRI studies indicate that in all cases, a long-term coherent investment strategy in support of local initiative was essential to success. Success to IFPRI is measured in economic growth, which omits precautionary planning – the benefits of which may otherwise indicate extremely high returns if prevention of millions of unnecessary deaths and stunted lives is valued. This and the risk of riots among the urban poor when food cannot be accessed are the reasons that good governments in poor countries increasingly focus on survival food security even when development agency advice is to the contrary.

Good governments now maintain plans in case of food crop failure and fast rises in food prices. The 2009 FAO Expert Forum confirmed the critical nature of such food security to government and international agencies, although its recommendations do not reflect this learning. Lessons from past approaches focusing on general agricultural development with adjunct schemes for food security indicate, for example, that cash transfer programs targeting very low-income families to stimulate higher expenditure on

food may in fact stimulate food price rises. And in addition, addressing hunger and malnutrition via poverty reduction has indicated unacceptable lags during which malnutrition incapacitates the potential workforce that is assumed to move into the productive economy.

Similarly, programs to bring smallholders into large-scale commercial production have had relatively limited impact. Thirty years experience has taught that emergency measures such as hoc cash transfers, sporadic school meal programs and confused nutrition education have had minimal positive impact on real food security. Informed practitioners despair at the slow-down, some suggesting that basic human rights are being abused. One retired senior agency official suggested to the FAO forum that approaches that allow such levels of unnecessary death and disability are 'morally repugnant'. These are serious accusations, which should contribute to renewed donor self-examination.

The recent food crisis initiated some introspection among donors. They find that the complexity of international development politics has distracted them from their mandates as they were influenced by ideologues, industry and other lobbies. Oxfam provides the example of USAID prohibitions on assistance in soybean, sugar or orange development. The Economist magazine has gone further noting the extent of middle-class rich-country influence on perpetuating human misery. 'Every infrastructure project the [World] Bank funds must meet rich-world standards: nothing pretty may be bulldozed unless strictly necessary, and no worker may be asked to do anything that a Californian might find demeaning. As a result, fewer dams, roads and flood barriers are built in poor countries. More poor people stay poor, live in darkness and die younger.' NGO philosophies are not exempted from these criticisms.

The substance of these concerns is beyond this book, except so far as it undermines credibility for new approaches in old agencies. Agencies need to be aware of this credibility gap when quoting cozy objectives such as the UN Millennium Development Goals, which with breathtaking understatement suggest that 'to eradicate extreme hunger and poverty ... agricultural productivity is likely to play a key role ...'. The negotiated inclusion of the qualifier 'likely' in that Goal may offer comfort to development investors, but it unnecessarily confines millions to less than adequate lives. It may be implied somewhere, but nowhere in the MDGs is priority given to security of food for survival and a reasonable life.

The FAO Expert Forum mentioned above considered how to feed the world in 2050. The meeting assumed that food demand could be met and it sought a consensus from experts on the means by which that could best be accomplished. Its conclusions are interesting: priority public investment in agriculture, good governance including rights to food, and demonstrated benefits of food development in reducing disease, increasing school-learning and raising economic productivity.

Such successes of the past are a product of institutions like FAO and it is reasonable to consider they will play a part in the future. However, their power is vastly reduced from what it was in the past, their budgets are but a shadow of earlier years and their field staff does not compare to that of past decades in either quality or numbers. That is why fora of experts drawn from agencies are not a viable means of considering staff and agency capabilities. One might expect to learn from analyses of past experiences – usually prepared by outside contractors in any case – but in the end it seems

better to leave their opinions about themselves within their comfy dining rooms.

Development agencies are not usually challenged in discussions about good governance as they are here. That is mainly a polite convention, but it serves no useful purpose and it is timely to consider the efficiency with which agencies assist development, if they indeed do at all. Some analysts have claimed that their overall impact on poor countries is negative as a direct result of their entrenchment of benefits in rich countries. The general theme would benefit from consideration of good governance not only within development agencies, but also in rich countries as in the following section.

Rich Country Governance

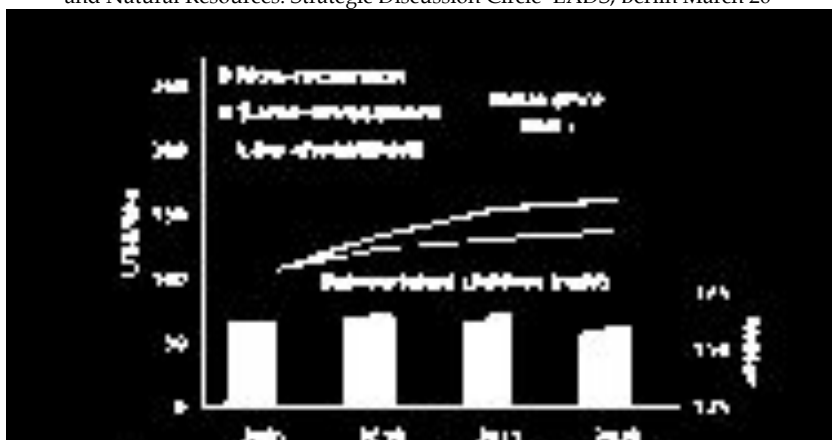
The subject of rich country influence on poor countries and international decision-making on the basis of mutual benefit is far too broad for any detailed discussion here. Rather let's focus on a recent example of self-interested action and its consequences, and on aspects of rich country influence on research supporting basic food security in poor countries.

The effect of rich country responses to their current financial crisis on their commitments to poor countries' food supply is indicated in calculations of the International Model for Policy Analysis of Agricultural Commodities and Trade. IMPACT is a model based on crop and livestock commodities in 115 countries with regional sub-models that cover supply, demand and prices for agricultural commodities. Using a base-year of 2000 it incorporates FAO data on commodities, income and population complemented by projections from the World Bank and the UN. Predictions from the model under an assumption that global economic growth will fall

by 2-3 percent indicates that reduced agricultural investment (low-investment) will lead to marked increases in grain prices and consequently to child malnutrition. That is, rich country actions are predicted to reduce food security in poor countries; no specific calculation is made of starvation and premature deaths.

The Effect of Recession and Reduced Investment on Maize Prices and Child Malnutrition

Source: J. von Braun, IFPRI 2009 Threats to Security Related to Food, Agriculture, and Natural Resources. Strategic Discussion Circle' EADS, Berlin March 26



The 'non-recession' line in the IMPACT diagram refers to expected commitments from the rich countries in the light of the 2007-8 food crisis. The 'same investment' line is the level of commitment expected before that crisis, while the 'low commitment' is that seen as possible if knee-jerk reactions to the financial crisis persist. Such attitudes in rich countries are fueled by outdated assumptions that the early successes of research and other inputs continue to bear fruit. This relative resilience of agriculture now turns out to be its Achilles' heel when small farmers are seen as insulated from the effects of the financial crisis. Policymakers thus made the assumption that rural areas can look after themselves while urban

dwellers require social protection, and even stimulus inputs to 'kick start' the economy.

This is not good rich country governance if they intend to assist poor countries. It is more an extension of self-interested domestic politics. The food crisis illustrated the fragility of survival food security in conditions of rising demand, crop failures and rich country self-interest. Whether urban or rural dwellers are more exposed to effects of the crises is not the central issue; securing food staples is central. This matter is the primary consideration of governments of poor countries, and the actions of some during the food crisis indicate that they can no longer stomach the anti-food security outcomes of outdated agency approaches and rich country fickleness.

But the poor countries rely on the rich countries for more than development finance; for example, agricultural research is so underdeveloped in most poor countries – China and India are notable exceptions – that the rich country domestic policies about agricultural services and decisions about international agricultural research are major determinants of progress in food security. Why? Because past successes have relied in part on research that adapted rich country discoveries to small farms in poor countries.

Rich Country Contributions to Food Security

It should be obvious that governance in rich countries impacts directly on poor country food security. Rather than tease out all of the mechanisms, the example of research can be used to illustrate some direct and indirect effects. Other examples might have been taken – such as insistence on commoditized approaches to food in an open trade that responds to global price signals, which has the effect of

poorer countries exporting food when they are in food deficit.

Three general sources of research can be described in support of increased availability of basic survival foods, as described in the following diagram. The first is research that is seemingly oriented specifically to the purpose through international agricultural research bodies such as the Green Revolution centers (CGIAR), the national agricultural research systems (NARS) of the poor countries and Advanced Research Institutions (ARI) in the West that focus on technologies relevant to poor countries, and now – although seldom admitted – in China and India also. The second is the general agricultural research, education and policy established in rich countries to serve their own agricultural systems and which have unforeseen spin-off benefits to poor countries. The third is the increasing amount of research conducted by or for private groups, which usually relates to broadacre farming.

The following diagram is an attempt to represent the current situation and so it contains comment on some of the barriers to impact from the current iterations of the Green Revolution centers and other specifically targeted research. Over the years, these have become captured by their constitutional structures, attitudes and operational approaches as well as being unduly influenced by politics. This leads them into short-term activities to demonstrate quick gains – and so prejudices research that requires a long-term commitment. Perhaps partly as a result of such reduced impact, and also partly as a result of international pressure to reduce direct investment in the food sector, funding for these bodies and their projects is reducing. Compounding these factors is a commercial and cultural naivety among some administrators and researchers, which results from their narrow

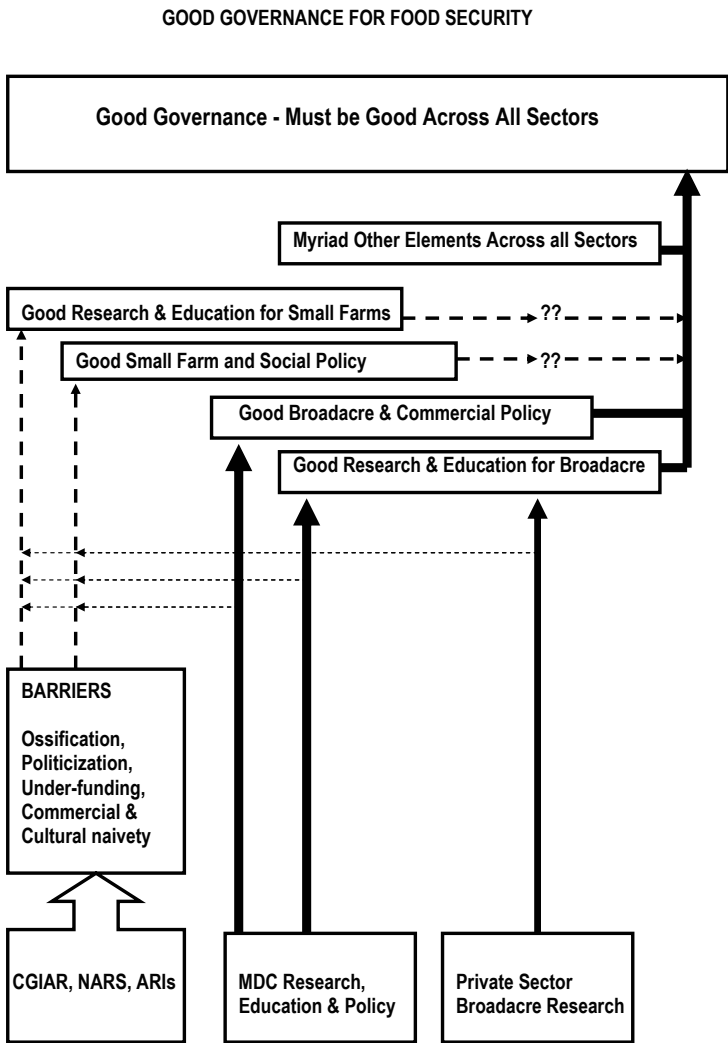
backgrounds and interests. If the research is considered to be applied research, it is the responsibility of researchers to understand its application, yet familiarity with commercial principles and cultural nuances and needs are notably absent from the appointment processes for research staff.

We must accept the less-than-ideal nature of research provision today. It is unlikely to change markedly and it does make useful contributions. Both the primary interest of private sector research and a component of public research are complemented by good education related to broadacre farming. The government research also informs good broadacre and commercial agricultural policy, which in combination with other sectors contribute to good governance from the viewpoint of rich country food production. Darker lines in the diagram highlight these linkages.

When it comes to the forward linkages from Green Revolution centers and related research, the above-mentioned barriers reduce its effect on necessary policy and education suited to small farm food production. Pious hopes for complementary, perhaps we should now say compensatory, inputs from the other research providers oriented to rich country agriculture are unfulfilled, as indicated by the faint and broken horizontal lines.

Without improved research management complemented by sound education and policies, the impact of research for security in survival foods in poor countries remains underserved. As we are using the level of service as our example of governance in this instance, we are forced again to conclude that patchy services are not good governance. As each of these research provision areas are from rich countries, we may conclude that this governance failure is in

those countries. Why? Because rich countries fund most of the work done by the Green Revolution centers and influence all other providers.



With such concerns about the governance of both poor and rich countries as it relates to small farmers and survival food security, we are now in a position to consider some practical beneficial actions. This forms the subject of the following chapter.

Chapter 7

From Criticism to Action: Refocusing on Small Farmers and Food Security

Chapter 4 considered small farmers as the efficient but forgotten producers of the majority of the poor world's staple foods and of basic food for survival. Here a practical view is taken of means of reorienting current attitudes to have development agencies and governments focus on small farmers and security in survival foods.

The theme is not new – Peter Rosset of 'Food First' for example has noted that small farms are 'more productive, more efficient, and contribute more to economic development than large farms. Small farmers can also make better stewards of natural resources, conserving biodiversity and safeguarding the future sustainability of agricultural production'. His perspective is that World Trade Agreements have already, and will further, deleteriously impact small farmers. While he doesn't say so, this is made worse through institutional ignorance that treats food essential for survival as no different from any other food. However, it is not all ignorance, some is informed action without any concern for other persons. The answer is not to nostalgically argue for small farms in every corner, but to see where they are best suited – for all types of farms have their virtues.

It is easy to elicit the virtues of small farms in comparison to broadacre farms, as is commonly done by whispering groups seeking to represent voiceless small farmers. But this pits broadacre farms against small farms when the world is not only big enough for both, but urgently needs both. It needs

to accommodate each in its own niche in social, humanitarian, environmental and commercial terms. All sizes of farms and variations on labor use are necessary to meet the total food requirements of the world. But it is the neglected small farms that benefit more people. The urgent matter is to now bring common sense to international development to accommodate small farms as a principle focus of food and national security policy in poor countries.

As we have said before, small farmers probably feed half of the world. Why is this news to many who should know better? Perhaps it is an overreliance on media that has allowed an educated public to be duped by single-minded trade objectives masquerading as a means of delivering essential food. WTO does not highlight the fact that food is not highly traded in the world – only around 10 percent formally crosses a national border. In the populous nations, the figure is around 6 percent. This makes sense, because governments of such nations know that they cannot afford to risk a shortage of food and the anarchy that would surely ensue. They have known this for ages, as have rich countries until recently.

An Old Argument

When Karl Kautsky asked ‘La Question Agraire’ in 1906, he could not have foreseen that the issue that would plague the world through to today. In fact he effectively asked two questions, the first about capitalist agriculture and the second about appropriate Marxist attitudes to small farmers. Predicting the demise of small farms under capitalism, he argued that Marxism should neither ‘artificially’ accelerate nor retard rural emigration. This attitude has crept into international development, possibly through Marxist ideals in the intellectual West and some NGO circles.

But Kautsky was trying to explain the durability of small farming in Germany. He therefore had no interest in such conditioning factors as psychology, security, policy, markets, technologies or agro-climatic factors. He simply sought to justify large farms as more efficient. And that seems to be the attitude of many policy makers today, who create a self-fulfilling prophecy by implementing policies that disadvantage small farms. The similarity of attitudes with Kautsky's extends even further when they each concede that small farms might 'irrationally' continue to exist.

It is not my intention to imply that international agencies have Marxist tendencies – in fact in the 1970 and 80s they were considered to be a vital balance between 'capitalist' interests and 'socialist' tendencies in university-educated persons of the time. What this 100-year debate indicates is that such questions are based on theory, or what may in this case be termed, ignorance of the real situation. Just as Kautsky ignored the human factors that produce the efficiencies of small farms, so do today's advocates who want to 'de-peasant the paysage'. The practical response is to acknowledge where small farms are efficient and support them. Where they are not, examine how efficiencies can be improved. Where they are efficient but threatened by excessive subdivision or overzealous commercialization, protect them. Their efficiencies in staple food self-sufficiency would then inform policies to support such national assets.

Revaluing a National Asset

Often seen as the tortoise of world agriculture by the progressive hares of commerce, small farmers have existed millennia longer than what rich nations have come to see as 'normal' farms. Today small farms continue to outnumber

and out-produce broadacre farmers. It is an enigma. How then can it be assumed that small farmers are less efficient? How can it be suggested that small farmers will disappear? Just, as the arrogance of the hare allowed him forget his goal and lose to the conservative tortoise, assumptions of development planners of the demise of small farmers have diverted attention from the goal of total global food production. It is foolish to plan from a theory or to make unseen corners of the world look like home. It is like valuing mortgage derivatives the same as hard production assets. The practical response is to educate development agencies better.

How have we arrived at a situation where development agency staff openly display ignorance about small farmers yet divert funds into encouraging the 'private sector' to 'stimulate development'? Surely the small farmer is the very archetype of the 'private sector'. And surely he has 'developed' a farming system by learning from elders and experience in a form that has proved sustainable over millennia while constantly adapting to new technologies. Rather than agricultural scientists, when they gather in their decreasingly numbers, bemoaning 'programme-nouvelle' development fads, they should seek means of deepening the understanding of the new multi-skilled management. The current era values skills in administration over field experience, truncated financial definitions over comprehensive economics and seminars over site-inspections. This is today's world, and therefore the target audience is now needed as teachers.

This can be read as polemical. Maybe – but it is also practical. The now maligned Green Revolution staved off starvation until today, by a focus on adaption of existing technology to small farmers. Its success is probably the greatest application

of science ever seen. Rather than accept it as a victim of its own success, its approach needs to be reintroduced to a new generation who don't know about it.

The successful production of more and more food over recent decades has generated the security that was sought. It was only logical for other sectors to then attract development attention. This doesn't mean that such sectors as health, infrastructure, tourism and industry were seen as more important than food when they were first advanced – just that food seemed to be under control. We all recognized this in the 1960s and 70s, when the main issue then was getting Western educated scientists to understand the nature of small farm food production. Many involved in the Green Revolution understood and revered small farmers, and the integrated cross-sector nature of small farmer development. That same understanding is what must be engendered again. The conflict between such practical common sense and uni-sectoral actions has ever been present.

As early as the 1970s Harwood opened his book 'Small Farm Development' with the words, 'In our impatience with 'backward' small farmers and in our haste to rapidly commercialize them, we have overlooked key aspects of their farming systems that could enhance our efforts to increase food production and improve rural well-being'. The dual objectives that remain today, of more food and better living standards for the rural poor, are clear, as is the value within those small-farming systems. Yet Harwood then drifted into a rigidly Western thought process of linear development with hunter-gatherers at one end and corporate or state farms at the other; no interim system was seen to be suited to specific environments, demographics, cultures or resources. He was wrong then, and his error recurs, arguing for our vigilance. Vigilance that a foreign culture's achievement be

not judged by one's own culture's values. It is as naïve as using an IQ test developed for urban Americans to assess the relative intelligence of African bushmen to live freely in the Kalahari. Before liberty can be talked about, the price of informed food security is eternal vigilance.

From the other side of the cultural gap, I have quoted Tagore in other books. In 1908 he said of his colonized India: 'We have for over a century been dragged by the prosperous west behind its chariot, choked by the dust, deafened by the noise, humbled by our own helplessness, and overwhelmed by the speed. ... If we ever ventured to ask, 'progress towards what, and progress for whom,' it was considered to be peculiarly and ridiculously oriental to entertain such doubts of the absoluteness of progress.'

But like it or not, we need to make progress in food production. When food production systems are viewed through African or Asian eyes – those not yet blinded by exposure to Western-style education and expectations – food supply can be seen as reasonably secure in rich countries. Of course this is as a result of; excess arable land, low population densities, favourable climates, preferential marketing arrangements and high purchasing power to secure essential imports of fertilizer and oil. As this is not the same situation for the rest of the world, it has evolved its own efficiencies in staple food production and survival food security from small farmer agriculture. The practical message is clear; development agencies and Western-influenced staff need means of opening their perspectives to see small farmers as national assets.

Writing-Off the Party Line

Business-as-usual in development agencies has already

brought some programs toward this point. True, they present a need for new investments to increase small farm production by using the same programs as the past. But it is a step in the right direction. The need in this case is to promote a more integrated view of small farmers so that policies can be developed to support or protect them from overzealous peddlers of credit or cash instead of food cropping. It seems that this protective part of the party line is being written-off like a bad debt.

The party line has its own seeming logic: aid to agriculture has fallen from a 1980 level of 17 per cent of total assistance to 3 per cent in 2006, with concomitant declines in government agricultural investment. The rate of agricultural productivity increase fell from 3.5 per cent in the 1980s to about 1.5 per cent and global food stocks fell by about 3.4 per cent a year from 1995. These investment levels were deemed acceptable since food shortages were labeled as special events. The practical response is to now focus on staple food security policy as a basis for investment in technology and infrastructure oriented to small farmers.

Practical solutions in place of carping criticism still require vigilance. The arguments are known – increasing uncertainty in food production as a result of climate change, land lost to bio-fuels, rising population and dietary shifts – and the answer proposed is increased investment in small farmer agriculture. Why is this not what is needed then? It sounds like the answer! But it isn't because such investment aims only to bring the small farmer into the commercial world to compete in regional or global markets. Yet the majority of small farmers focus first on food for subsistence, not commerce. And in any case, the assumptions that increased food demand leads to price signals that make farmers grow more food has proved invalid for both large and small farms.

The practical response is to segregate small farmers into those with a primary subsistence focus and those in the small group that may have commercial potential, and to then work within those groups to meet their needs.

To assist small farmers requires one to think like a small farmer, to see the effect of one action on many factors in the agro-ecosystem that is the small farm. It does not require templates or ideologies from agencies, but it does require country- and area-specific policy attention to minimize collateral damage from other sector programs. Thus good policy that directs aid and government and private investment to useful purpose is a first step – and that policy will logically start with protecting staples and survival food security. In the absence of such policy, it is not possible even with the best of intentions, to plan what small farmers need. In practical terms this means that policy concerning basic food security for healthy survival and small farmers should not be automatically mixed with policies about poverty alleviation, gender equity and environmental protection. Those may be outputs, or they may be secondary objectives for consideration after basic food security for survival is sound. Former Malaysian Prime Minister Mahathir was correct more often than his near OECD neighbor liked to admit, such as when he exposed the hypocrisy of calls for restraints on poor country logging coming from rich countries that had finished clearing their own forests. So it is here not considered practical to mix global political agenda with such a basic matter as survival food security, though some global issues do impinge on small farmers, such as climate and water regimes.

Watering Down Dry Messages

If sea levels rise by 300 millimeters by the end of this century

as the majority of models predict, the fertile river deltas of Asia and Africa will be at risk. At risk of increased salt-water intrusion, river siltation and course change, flooding, damage from more frequent storms with increased loss of lives. That is small farmers' lives and small farms lost to climate change. This is serious for two reasons: first, much of the world's food comes from such low lying deltas, and second, broadacre farming has already significantly displaced small farmers on many non-delta lands leaving delta farmers as a last and now vulnerable repository of advanced small farming innovation.

If sea-level rose by one meter – the worst case scenario – it has been calculated that this would displace some six million people and 12-15 percent of arable land in Egypt, some 13 million and 16 percent of rice in Bangladesh and some 72 million and unspecified large areas in China. These deltas are very expensive to protect. The practical response is to use realistic predictions in survival food security policies as a guide for major technology development oriented to small farmers in deltas. Such technology would build on the past innovations of the small farmers themselves.

For example, small farmers have evolved tide-driven irrigation systems in the Mekong Delta, acid-sulphate soil flushing technologies in the Sarai of Vietnam, natural soil renewal management systems in the Nile Delta and highly integrated ecosystem agriculture in the Chinese river deltas. Retention of this knowledge coupled with means of continuing to use what has been the world's most productive agricultural land is the task of policy and research. Policies that promote high oil-use farming systems would be re-examined closely for real benefits; the even more limited agricultural input of phosphorus would similarly be used as a basis for determining efficiencies. I expect that this would

favor continued investment in delta regions on the small farmer model. Small farmer attention to individual plants and animals, to intensive pest and nutrient management maximizes use of such valuable land. As cities have arisen from such deltas, it is practical for nutrients from those cities to be collected by agriculture, as is common in China where millions of tons of pig and human waste is used on small farms as fertilizer. The general approach extends to all food production and harvesting.

Likewise, the small farmers' cousins of the sea, small fishermen, have millennia-old traditions to husband community fish resources. Now subject to commercial encroachment, piracy and pollution, such small fishermen and their care of the basic resource are being lost and a rear-guard action is being vainly fought to legislate protection of remaining marine breeding resources. The marine situation mimics that on land, with declines in small fishermen numbers and concomitant increasing risks to future production. The capture production of fish has been flat since 1985 according to Meryl Williams – erstwhile chief of the International Fish Centre, with aquaculture making up the difference, which is now approaching half of all consumption with the same narrowing of diversity that characterizes other farmed food production. Potential for technological development remains high as the whole field has been neglected compared to land-based food production. The practical response should be the same; policy that is firm on resource and small fisherman protection within the overall staple food security policy expressed in firm regulations and firm policing.

Beyond the deltas, seas and irrigated areas at the other end of the environmental water regime are the 40 percent of the rural population in developing countries who live in less-

favorable agricultural areas. Mainly drylands, such areas vary markedly and cover about 41 percent of the earth (about six billion hectares) and support, according to FAO, some two billion people. In some cases, innovations allow profitable crop or livestock production. Technologies and social systems that encourage improvement to small farm subsistence agriculture in these regions are poorly represented in research and development. Without such enlightened support other factors decide the agenda. As FAO's Leslie Lipper points out, 'what happens outside the agriculture sector is as important, if not more important, to what happens in the agriculture sector for determining the status and future of the drylands'. As with many such reports, this may be code for increased urban migration with its concomitant increased demands on food production. Further potential exists in these areas and the practical response is well-focused technology for small farmers who will remain close to subsistence.

A different type of risk to survival food security is the genetic erosion that is hidden in homogenized agriculture. To appreciate the risk, one must forego attachment to the 'noble peasant' image and acknowledge that all nations eat foods originating from outside their own genetic pool. We are all linked through the exchange of genetic material and seeds that has followed migration and been accelerated by technology in recent centuries. For example, a current and very real threat to world food security is wheat rust, which the Green Revolution thwarted through reliance on a single gene. Now multiple genes conferring degrees of resistance are employed with advances in breeding technologies – but it is constant battle, needing constant vigilance. Genetic manipulation is the standard approach against many such risks. Another risk, that of a narrow genetic base to food making vast areas vulnerable to a specific disease or pest, is

measurably reduced by small farmers who choose varieties that differ from the mainstream for such reasons as flavor, ease of intensive crop management or just availability of seed.

I have mentioned genetically modified foods again, so I must contextualize myself. It is better to consult science than public opinion. Carpenter's work observed in *Science* this year noted that peer reviewed papers about genetic manipulated crops reported overall positive compared to negative outcomes (88:6) in publications from poor countries. The same but less emphatic trend in rich countries (36:7) suggests greater levels of choice among surplus. For economic impacts, overall figures indicate a positive to negative ratio of 71:16. To take just one example of the application of the potential technology, we can look at reduced losses from pests and diseases. An estimate of Plantwise – an initiative of the respected CABI – notes that losses to plant pests and diseases add up to about 40 percent of what is produced. This applies to both small and large farmers. Rather than prolong the debate about genetics and ownership of such material, it is more practical to include in survival food security policy, the protection of small farmers from unsuited genetic material and invest them with ownership of those varieties their forebears have selected.

Notwithstanding the sentiments advanced in this book, and my expectation that informed parties will accept these ideas, I foresee a continual reduction in small farmer numbers. With the accompanying loss of knowledge, productivity and intangible benefits, there is a range of practical measures that can mollify impact. These include:

- directing displaced small farmers to new urban horticultural enterprises and other parts of food production and distribution;

- paying small farmers for the value of enhanced water and nutrient use and perhaps even carbon sequestration;
- locating food processing enterprises in rural areas, and overcoming immature interpretations of subsidies for landscape management to learn from European practices.

There is also a school of thought, which seems to feel that the decline in the small farmer numbers means that their skills are not useful. This is so far from the truth that it is worthy of specific comment. It is not just skills that we should talk about – it is knowledge and the creativity that knowledge and confidence inspires. This is an obvious trait in small farmers known to field practitioners and is a characteristic of us all if we are allowed sufficient freedom. In many cases across rich and poor societies, we find people opting for creative lives above additional material gain, with increased psychological security. This is the secret of Yunus' Grameen Bank – its first objective is not to extend credit but to 'turn on the engine of creativity inside each person'. This should be the goal behind survival food security policy; not only would it be practical, it would be a sign of good social policy.

This section has considered deltas, seas and dryland agriculture. The most productive lands outside deltas are small farms with irrigation, as considered in the following sections.

Small Farmer Irrigation

The volume of food produced in poor countries is miraculous. From regions destined for mass starvation, huge increases in population have been exceeded by greater increases in food production. Today, two of the most

populace nations of the world are food exporters. This is a product of applied agricultural science, a field in which the West once led and generously assisted the poorer regions of the world; the Green Revolution. Today, the West no longer leads technologically, especially if the world's major food production systems, small farms, are considered. The great gains of the 1960s and 70s continue to be useful, but the children of the Revolution have not maintained the adaptive research at its previous pace. Thank heavens for small farmer initiative – it has filled the gap. A confronting example is presented by irrigation in Asia where 70 percent of the world's 277 million hectares of irrigated land covers 34 percent of Asia's arable land, which produces 60 percent of its food grains, mostly from small farms.

In their 2009 report 'Revitalizing Asia's Irrigation', the International Water Management Institute understated that 'state-built irrigation schemes are under-performing'. Those large state managed irrigation schemes were designed for another world, another agriculture and so are less useful to small farmers with their year-round need for reliability and flexibility. Together with problems from salinity, waterlogging and poor maintenance of old schemes, small farmers have found ways of complementing or even rejecting those systems. They have done this by, for example, innovatively pumping from aquifers and rivers and building on-farm storages.

As the report notes 'millions of small-holders have invested in pumps so they can extract water from shallow aquifers whenever they choose'. Such private groundwater pumps now supply a significant amount of the irrigation water for small farms across large areas of South, East and Southeast Asia. It is now clearly impractical to support creation of large centrally designed irrigation schemes that ignore the specific

water needs of small farmers.

The same small farmers who have been innovative in accessing water have increased crop yields at the same time. Rather than just seeking to emulate products of innovation elsewhere, development agencies can miss the point that small farmers' ability to innovate should be backed, not the innovation itself. State, external agency and NGOs easily mistake the medium for the message, choosing to frame backward-looking 'policies to ensure external influences on the water sector are properly understood and planned'. Add the fact that these innovations occurred despite unsupportive policies and the practical lesson is stark – the need is to develop a supportive environment for small farmer innovation.

Of course, the example chosen here has another dimension that illustrates that innovation stimulated by necessity can value short-term needs over longer-term benefits. In the case of unregulated groundwater pumping, resource depletion is inevitable. The practical response is not to ban pumping but to look to the priorities expressed by small farmer decisions, which in this case would suggest that past water delivery schemes have met neither the schemes nor small farmer objectives. Experience indicates that setting one more policy as a top-down concern for the environment – that is, protection of the groundwater reserves – will lead to it being buried in the mire of compromised agency agreements and loan conditions.

Practical small-farmer focused policy would be integrated with development of further irrigation potential. Potential still exists, despite conservative reports to the contrary. The two major food producers, India and China provide examples. India claims it has a potential of 113 million

irrigable hectares compared to its current total of 57, while China's 58 million irrigable hectares is said to be expandable to 64. Even in Southeast Asia, the current 17 million hectares compares to a potential area of 44. These figures are from Asia, which is by far the world's most developed irrigated agricultural region, as the IWMI table below indicates. In practical development terms this means that good governments and development agencies will be engaged in a massive about-face in investment in new irrigation technologies and water delivery systems.

Irrigated Areas and as a Percentage of Cultivated Lands

	(million ha)			(% of cultivated area)		
Year	1980	1990	2003	1980	1990	2003
World	193	224	277	16	17	18
Africa	10	11	13	5	6	6
Asia	132	155	194	29	30	34
Latin America	13	15	17	9	11	11
North America	21	22	23	8	9	10
Oceania	2	2	3	3	4	5
Europe	15	17	25	10	13	8

Expansion of irrigation in many areas is only possible by increased water use efficiency, an approach taken by China's development in its water-saving technologies in parallel with institutional innovations. Thus the 25 percent rise in irrigated areas in China between 1980 and 2004 occurred without a significant increase in water requirements; irrigated area increased by 5.4 million hectares and food production by some 20 million tonnes, thereby allowing some 200 million more people to become food-secure. It is from such practical experience that other countries will develop their food security, using their small farmer production bases.

The Chinese experience may have been heeded in a 2009 ADB report on water rights, which argues in favor of

protecting water required for small farms. They give as an example, Indonesian Water Resources Law, which acknowledges water rights for small-scale agriculture. They say, 'regardless of the financial questions, there is a strong case for protecting the water rights of small farmers, particularly in areas where development change is expected, to ensure that their interests are fully recognized in any change process'. This is the beginning of practical informed policy.

Nevertheless, China is not a popular example within Western-influenced agencies at the present time, for reasons unrelated to the matters we are concerned with here. Let me mention one that is directly related however – population. Without international agency conviction on the matter, the environmental and other 'rights' arguments against Chinese actions in fact foreshadow the inevitable for other countries and regions. Countries such as China and India with their small farmer bases have become food secure by strategically allocating a secondary priority to many development agency agendas. Their practical focus on national food security has required that contrary action. Water use efficiency has been essential to that success and this has been driven by dynamic agronomic and infrastructural research, as follows.

Focusing Research

It is not a simple matter of how much money is or should be allocated to agricultural research, for the total figures are astounding. For example, the ten major plant science companies of the world invest something like \$4.7 billion in research each year, and budget on each new product costing a quarter of a billion over nine years to reach a marketable stage. Undoubtedly one of the most innovative sectors in the world, it is necessarily focused on profit. But this is not

oriented to the specific needs of subsistence and small farmers. Adaptive research that might show how it could apply to small farmers is woefully underfunded. Rather than counting in billions, most researchers deal in hundreds of thousands if they, or more specifically the small farmers, are lucky.

We have all been lucky over the past half century when continued increases in food production have met total average demand and allowed food prices to fall. These increases have come in part from public research investment. Figures from Australia's enlightened joint industry and government funded Rural Research and Development Corporations indicate that research benefits exceed costs by 2.4 times within five years, 5.6 times within 10 years and even more up to 25 years. In the USA, the extensive work of Alston and Pardey has shown the same trends. But their detailed analysis of what was once the largest agricultural research investor concludes that investment reductions have led to a productivity slowdown. With such slowdowns of public research, the inputs in Australia and elsewhere only go a small way towards making up the difference in global terms.

To make matter worse, it takes at least several decades between research investment and realizing a return. The Alston-Pardey analysis concludes that, in addition to the inadequate quantum of agricultural research funding, current planning and investment cycles will not meet future food demand. This applies to research serving commercial broadacre farming. We may assume that the same principle applies to the more limited research oriented to commercial small farm food production in poor countries, and the even tinier proportion of research oriented to subsistence farms. Such small farmers have relied to date on spill-over benefits

from this commercial broadacre-oriented research for many of their adaptive innovations. Whether or not this is accepted as a reason for renewed USA investment in agricultural research, it is only practical to directly fund research focused on small farms – for these are the world’s continuing major food producers. It is they that will keep would-be food refugees at home.

Research should also extend to better understanding of small farmers who have experienced real reductions in prices continuously over the last 50 years. The false expectation that small farmers could commercialize and benefit from rises in food prices neglected the fact that they have never been able to accumulate the capital for such commercialization. In any case as FAO notes in its ‘State of Agricultural Commodity Markets’, most small farmers are not linked directly to the markets analyzed by global institutions. As practitioners know, the prices of fertilizers and other inputs have risen in concert with food prices, so few benefits accrued to small commercial farmers at the end of the line and without a marketing or lobby voice. Why continue patching this old model of making small farmers in poor countries into large commercial producers and interpreting a lack of investment capital as a need for credit? It is more practical to acknowledge the huge need for small farm oriented research, including controversial technologies.

Somehow it remains controversial that more than 75 and 25 percent of the world’s soybeans and maize are genetically modified. To sensitive European citizens, this must be more alarming than the previous news that half of the world’s cotton is GM. European threats, indeed actions, to close its markets to poor countries that use GM technologies, while immoral in the hardship they inflict in poor Africans, have had little of their desired political effect. Poor countries

represent about half the area planted to GM crops, mainly in Brazil, Argentina, India and China. To put it in the language of the world food production, some 14 million farmers use the technology, 90 percent of whom reside in poor countries. At the same time European Greenpeace claims a victory in the decline in GM crops in Europe last year and still lobbies poor countries. Yes GM comes with risks, as does every new technology – but that does not give the rich world the right to stop food production in poor countries. A practical response is to bring a greater focus onto safeguards – an irony for that part of the world that spread Mad Cow prions in the human diet.

The motivation to use GM has been to ensure national security through food security. Its application to both small and large farms has spawned research in countries using the technology. Given small farmers' quick eye for a useful technology, one would expect it to continue its spread if it is inexpensive. Increased yields and savings on chemicals from GM crops are already estimated to contribute an annual saving of four billion to China's more than 100 million small rice farmers, according to the NGO that monitors GM.

So GM takes off and multinationals profit. The estimated GM seed market value was \$10.5 billion in 2009 for a total farmer's crop value of some \$130 billion. This is the way of things; in colonial times profits were accumulated by European government companies, in other times, feudal arrangements concentrated wealth. In fact today, it appears that fertilizer supply, expertise and access to technology may be tying farmers to large and wealthy groups. And these include not just the multinationals, but governments that invest in agricultural research, like China. While wealthier nations reduce government investment in research and rely increasingly on private sector research, China, India and

Brazil have been more responsible.

But to be fair, it is perhaps a difference in what is considered responsible. For example, one of the dissipative factors of the food research focus that Alston and Pardey mention is environmental research. And some of this research has direct production benefits at the same time as its intended environmental benefits. This is the case for nitrogen, a component in ecosystems that is less popular in lay literature. In agriculture, we are becoming accustomed to hearing of the limits of mined fertilizers such as phosphorus and are daily reminded of multinational financial scrambles to own potassium reserves – all to position owners for the profits that will come from food as population continues to rise. But we don't focus on nitrogen in the same way, probably because it is abundant in the air and overwhelmingly produced by the Haber-Bosch process in association with petroleum processing. It is wonderful invention, for this source of the nitrogen is now essential to the intensive agriculture that feeds the burgeoning cities. If it did not exist, half the world's population – three billion – could never have been fed.

But nitrogen's day in the media may yet come as it is costly and at present, has a contingent environmental cost – because up to half of that applied in such forms as urea is not used by the plants for which it is intended. It volatilizes or leaches into the wider environment as Deli Chen's outstanding work continues to show. The same work is determining means of increasing plant-use efficiencies, which will impact all countries. It could especially assist India and China where application rates of nitrogen on crops are well above that necessary for even maximum yields. Why? Because populous countries take no chances, and it is easy to think that if a little is good more must be better. For

the interactions of nature, so far as we understand them, this is seldom true. Does it matter if we can produce the nitrogen from petroleum plants anyway? Yes, because the volatilized nitrogen from agriculture transforms into potent Green House Gases and is already seen to be a source of global warming. Such science is critical to all food production, for both small and large farmers as both use nitrogen fertilizers in large doses. The next step is probably GM nitrogen uptake mechanisms in food crops.

We can't stop technology. All past attempts to do so have failed. Better to acknowledge it and create a responsible user environment through government regulation. An appropriate policy focus would acknowledge the small farmer's understanding that his farm, like all others, is an ecosystem that he maintains artificially. He can see where a GM seed will work for him and where it will not. Where the technology exceeds the small farmers' knowledge, the old-time agricultural scientist who knows the art and science of food production comes to the fore – let's hope for a resurgence in the education of such deeply and broadly educated persons who are willing to work in remote locations. And let's be practical about new technologies and their safeguards and not be cowered by self-interested Luddites. Such new technologies also point to new means of extending information to small farmers.

Making Extension Practical

Extension – the word has been variously squeezed to suit ideologies, public service systems and research paradigms. In that process its origins as an extension of the learning processes of the great US land grant colleges of a bygone era has been lost. It is now often a backwater for agricultural graduates and a disinterested government department in

poor countries easily subjected to political misuse.

It is therefore no surprise that some say that it should be dropped from the development lexicon. More practical are suggestions – such as that of the Sygenta Foundation – that extension be re-invented. The legacies of systems introduced by development agencies have shown that the research output or other product driven models are at least superseded. Suggestions that the opposite approach – ‘demand-led’ – are thus to be expected. But it is more practical to view extension of the future as a two-way communication where ‘supply’ in the form of research outcomes and other products are a response to small farmers who have communicated their ‘demands’ known to researchers and policymakers.

This two-way communication applies to all farmers including that majority of small farmers who do not seek to become commercial. The dearth of new technologies for rain-fed farms and other less resourced areas is one example. Widening urban-rural disparities at a time when food production seems to be increasing at only 1.2 percent per annum while population is growing at about 1.7 percent suggests that all practical measures to align technology and policy development and delivery require a focus on efficiency. On small farms this may be expressed in terms of larger families being fed from the same plots with the consequence of less surplus for sale to non-producing food consumers. The increasing food gap will be expressed to urban consumers as higher prices, which exposes the growing number of urban poor to food insecurity. In practical terms a new version of agricultural advisory services is warranted, for small farmers already source information from many sources other than extension officers.

An Indian example glossed over before illustrates the point. A survey of small farmers indicated the proportion accessing new information from different sources. It revealed that each of the categories of; other progressive farmers (17 percent), input suppliers (13 percent), radio (13 percent), television (9 percent) and newspapers (7 percent) were ranked above extension workers (6 percent) and government demonstrations (2 percent). Routine extension run by government suffers from a single story understanding, which as Chimamanda Adichie points out can be dangerous in any field, not because the story is untrue but because is partial. Practical agricultural communication will move away from human agents to use modern media. Today it is mobile phones for crop insurance in Kenya. Tomorrow it may be on-line and other IT communication technologies even at semi-subsistence level.

But it takes more than local innovation and trickle-down benefits from commercial initiatives. The impressive Syngenta Foundation initiative is embarrassing to moribund public extension systems, yet is limited to commercial small farms. And most such initiatives rely on credit. Yet under-resourced small farmers cannot service loans and may not even deal in the monetized economy. The practical response is to devise a system that does not rely on credit – this does not mean direct subsidies as much as it means technologies and policies specific to a development situation. The point is seldom enunciated, and may be more easily understood by looking from a different perspective that is not reliant on a cash-exchange economy controlled centrally at national and international level. Viewed from a small farmer perspective, credit is not essential to development, as is further discussed later in this section. So what is in an extension ‘package’ if we elaborate the ‘single story’ worldview?

To some diehards it is interpreted to mean that extension is not necessary at all. The genetically modified Bt cotton has spread without an extension program and it may be argued that much of the Green Revolution technologies spread to suitable areas without it. A closer look at the history of the Green Revolution reveals that after the initial technological successes, extension systems were added to expand to areas that had not self-accessed the Revolution and that these extension approaches were less successful than expected as they failed to accommodate cultural mores.

But the conclusion that extension is passé is wrong. As a communication system for technologies, policy and managing survival food security, extension remains of critical national importance. It is not only impractical to measure the benefit in conventional financial terms, it misses the point that its overall economic benefit is as part of national security through;

- basic survival foods,
- welfare-net substitution and
- as an anti-urban migration device and various other outcomes.

This is a realistic view of the majority of small farmers, although those that have commercial potential may be practically served by private sector models.

Letting Small Farmers Develop Privately

Small famers respond to private sector initiatives in research and are contributing more than ever to overall food supply. As Marco Ferroni notes, the private sector worldview reveals that some small famers interact better with markets than they do with development projects, especially those farmers who emerge from subsistence to forms of commercial production. The effort spent by past extension approaches of trying to

predict every need of a small farmer is contextualized by this observation since market opportunities allow direct responses and highlight constraints.

An example mentioned earlier clarifies the point. Agricultural chemicals licensed in Bangladesh include only 23 percent of those registered for use in the EU. Why? Not the usual whipping posts of intellectual property rights or multinational greed, but a lack of basic capital to conduct the field trials that are necessary before registration of new products. Similarly, poor country government extension through agents ignores the massive changes in communications that now dominate agricultural input suppliers and markets elsewhere in the world. The practical response is to 'first do no harm' by not intervening in markets or supply responses while observing where assistance may be beneficial.

If the private sector in this sense of facilitating markets is beneficial to small farmers, perhaps private sector research itself also fills the widening gap of institutional research. This is not, as is often supposed, a gap caused only by insufficient funding, but one also created by 'single-story' worldviews among research funders and planners isolated from small farming practice. The figures for such research funding are confronting, as Philip Pardey reveals in his reassessment of the private-public funding ratios in agricultural R&D. This is the research that staves off the food deficits that will ultimately determine national security in all of our countries. He finds that the proportion of general research funding related to poor countries where some 60 percent of the world's population lives is around 30 percent of total of both private and public sectors. In practical terms this unmask part of the glossy façade of research funding as mainly public investment. In fact it is increasingly a private

sector activity, particularly in rich countries. This points to the need to include private sector experience in development discussions. And if these figures are not convincing, the actual figures for food research are compelling.

Fully 95 percent of food-related research is conducted in OECD countries. Add to this the greater food output of poor countries and the huge number involved in farming and the huge number of consumers, the proportion of global food research oriented to small farmers is so low that it is no exaggeration to call it negligible. A major reason is obvious – private research investment can only capture returns from farmers with commercial potential or from related areas such as user-groups and processing. The *raison d'être* of the private sector is efficient production of profit within reigning regulations. And here is a further limitation to small farmer access to research – inadequate regulatory environments in poor countries where legislation is commonly insufficient, excessive, out-dated or unable to be enforced.

If a criticism is warranted, it is of the public sector and the international development institutions that have neglected policy and regulation. In the argument of this book, that neglect of survival food security and small farmers has led to an unstable political situation that endangers us all. The practical response is to render unto the private sector those aspects they do best and to government, the responsibility to protect and support subsistence farmers using state-of-the-art communication and other technologies. Just because the benefits to a nation from small farmers are not captured as cash is no reason to limit investment in the sector from government – in practical terms, complete economic analyses are needed to appreciate the value of small farmers.

One value of small farms has been that food production has risen year-on-year in keeping with the promise of technology fuelled by research. However, except for China, growth in production since 1990 has been lower than before 1990. Pardey relates this to a drift away from farm production research towards political agendas. Distracted by culturally specific gender or carbon trading agendas for example, policy makers have in effect neglected food security in some countries. This would be considered negligent elsewhere. All this is made doubly mystifying when we look at the economic and financial rates of return to food research.

Pardey confirms such returns as very high, yet requiring sustained investment over 50 years or so. This has worked in the past, but more recent fads in development policy have driven constant chopping and changing of investment. Practitioners have probably felt that the 50 years from research to widespread adoption was about right, but practitioners are not employed by the agencies that set agenda these days. One can only hope that the other part of the analysis is heeded so that the faster track of public-private partnerships in research with an average adoption peak at year 24 emerges. In practical terms, the rigor of private sector long-term research management needs to be introduced to the institutional research system.

It sounds like a revolutionary challenge. However, evolution rather than revolution has served mankind better, and we have examples of past systems evolving albeit slowly to meet new needs and redress past failures. Amit Roy provides an example in his 2009 consideration of fertilizer research stimulated by government subsidy in Bangladesh. As fertilizer prices rose, so government subsidies to encourage their continued use rose to unsustainable levels, which within responsible areas of government created interest in

improving the efficiency of fertilizer usage. The research determined that routine techniques allowed plants to use only about one-third of the fertilizer applied. This led to a direct placement technology being developed for pelletized urea and the government's buying power being used to stimulate private sector investment in production facilities. The overall result was a 40 percent reduction in the use of urea and a 20 percent increase in rice yields. It also solved cross-border losses to India where fertilizer was not subsidized; one near-border Bangladesh project was said to have been ordering so much subsidized fertilizer that it could have covered its soil to a depth of 75 mm had it really been applied to the project area. This solution is not revolutionary – it is just good practical development that links policy to research to food production for both subsistence and food markets.

Is this enlightened approach restricted only to small businesses in very poor countries like Bangladesh? Or can we see the multinationals also assisting small farmer food production? William Niebur of Dupont advocates a practical approach of public-private partnerships that build on the strengths of each partner and which binds each partner to long-term accountable outcomes. When this approach is explained to an auditorium of routine development researchers, a perceptible cringe may be discerned. Yet the approach is a bigger step for the Duponts of the world than it should be for international development agencies, and particularly for food production research centers of the CGIAR, for example. Some outputs from this research are already well known, such as lysine-enriched food crops, but the mutual commitment required for this responsible approach seems compromised by the ever-changing fads of development, which if they address small farmers at all,

consider them as dills unable to help themselves. Nothing could be further from the truth.

Skills not Dills

Small farming is a vocation. The only choice for the individual may be to migrate. It is nevertheless a life-consuming role unlike employment in a development agency. Peter Horne of the Australian Centre for International Agricultural Research observes that small farmers demonstrate multiple specific skills, perform on-farm pre-processing, produce to specific markets such as organics and maintain astute cost management. He has collated several examples of small farmer initiatives that would not otherwise have been conceived, for they relied on the insights and conviction that a vocation imbues. Some of his examples have been included earlier – see references to small farmers tea in Sri Lanka, cocoa in Sulawesi and cassava in Vietnam. How did such initiative find expression? The answer includes such practical factors as freedom of local markets, confidence in investment, equality with researchers and fostering of local leadership.

With relevant research as part of informed small farmer oriented policies, initiatives like these allow small farmers to continue to increase food production and thus continue to underpin global food security. The point is not lost on the new entrepreneurs of development, the large philanthropic groups that aim to revitalize tired development institutions. Whether those old dogs can learn new tricks remains to be seen, but so far some successes must be acknowledged. It certainly helps to have billions of untied philanthropic dollars for leverage. But it is also a challenge to avoid being seen as just one more source of funds to support the same old programs.

Prabhu Pingali of the Gates Foundation notes that the simple initiative of stratifying poor countries according to development level can highlight overlooked yet critical needs as national food security policy and planning. It can also highlight survival food security. From such a realization, the roles of the public and private sectors in fields as diverse as research and credit can be defined. It is then but a small step to the popular definition of 'market failure', which seems to serve as a justification for intervention in a manner that ideological approaches (like free trade) have precluded. It does not require much imagination to then see a practical program that, for example, reverses views of small farmers being threatened by the rapid expansion of supermarkets. Then the establishment of links between supermarkets and small farmers that reduce transaction costs and simplifying supply chains can be considered. With such support, small farmers can be relied upon to again innovate in unexpected ways.

Small Farmers and Innovation Science

Innovation and stimulating its continuity is the preoccupation of management scientists who analyze research. Just as there is every reason to focus the highest quality science on the most basic necessity of food and its majority producers - small farmers - so it is reasonable to garner the fruits of management research and apply them to food production. Indeed the etymology of the word innovation embodies the very renewal and change that defines the complex management systems of small farmers. Successful small farmers are ipso facto innovators. The unsuccessful ones are forced out of production, not only by the market or bankruptcy as for commercial companies but also by hunger in the case of subsistence farmers. Food

production is a life and death occupation and hence innovation is critical to the survival of not only small and near-subsistence farmers, but also increasingly to billions of urban consumers.

The question of how can we improve current food production occupies most minds in this field, but as we have seen only a minority are occupied with the application of global knowledge to small farmers. This is why the answer usually arrived at is expansion of broad-scale agriculture; this is an answer, but it is only a part of it, and not the largest part since most food is produced by small farmers. The question we might well ask is – how can we understand innovation by small farmers and support it? A beginning to the answer lies in what management scientists have discovered, that innovation is not a predictable or managed process. Assistance is best concerned with creating the environment suited to innovation. So in small farmer food production, the environment has been conducive over the millennia through which the various iterations of the system have developed. But today it is constrained by limited worldviews of productivity. And as we know from first principles, it is only practical for productivity to be redefined for each circumstance according to cultural values, perceptions and acceptance of risks, and basic definitions of what is a ‘product’.

Three decades ago the disconnection between cursory economic arguments and small farmer practice led me to highlight the economic value of draught bovines in farming systems. Where Western economic conventions of the day valued only products such as milk, meat and calves, small farmers had a clear view of total value including these products as well as work, self-replacement, leather, incremental savings mechanisms and so on. Hence small

farmers' decisions concerned the whole of an animal's life. But to the partial economics applied from the West, this seemed inefficient – that approach called for short-term optimization or even maximization of only milk or meat production. The blindness of that era continues to darken some decisions about small farmers. One of many practical responses is to take a whole-of-farm-system approach in economic analyses, not just gross margins. This is more complex, yet as argued earlier, it is the basis of true economics; gross margin analysis was never meant to be more than a simplification for gross comparisons. With a complete economic view, the unique features of small farmers are considered, such as the value of his personal on-farm touch.

The Personal Touch of the Small Farmer

Just as we know that the attentive gardener has healthy plants and the kindly horseman has a calm horse, so it is often noted that the small farmers of the world obtain higher overall farm outputs than single commodity production systems. It is often noted – but seldom given credence in policy.

The reticence for accepting the benefit of the farmer's touch on plants and animals is well demonstrated by what passes as news today. What any sensitive animal scientist, farmer or rural person knows readily become news to the majority who live separate from their food sources. For example, it was newsworthy for Science Daily to publish an article 'discovering', that 'a cow with a name produces more milk than one without'. I suspect the scientists at the UK University of Newcastle where the research was conducted found the public interest amusing. They have used the opportunity to point out that, in practical terms caring

farmers know that an animal's welfare is important and that its production is correlated with its relative feeling of comfort.

Such investigations have also confirmed that animals in modern farms where contact is impersonal may be scared of humans, which is used consciously or unconsciously as a lazy means of keeping animals tractable. Small farms in poor countries include animals as part of extended families, as was the case in Europe until relatively recently. But within a couple of generations such memory is lost, which may explain many illogical agency development plans for livestock. In practical terms, three factors of small farmer livestock systems are enhanced by their approach:

- individual animal productivity is higher,
- ethical treatment of animals is higher
- and human lives are enriched.

These factors need to be recalled before any proposals for commercial intensive systems are promoted.

We may find the same attention to detail in plant production as a function of farmers with a few plants being able to physically remove pests rather than use a spray that collaterally suppresses plant and beneficial biological activity at both micro and macro levels. The green thumb of the gardener, which is so often linked to an active engagement with his plants is the same as the dirt-under-the-fingernails of the small farmer. This is one reason that yields from small farms can exceed those from broadacre farms. But there is another and equally significant reason, which occurs through natural biological interactions.

As has been labored throughout this book, the majority of the world's farms are small and managed with multiple species of plants and animals. Not only are they mixed

farms, various species intermingle. Food plants thrive amidst garden flowers, for example. Of course, small monocultures exist, such as the rice paddies of the world's most productive farmers in Asia. But such fields are integrated with the rest of the small farm/garden, with neighbors' rice and other crops and with the adjoining forested areas – many of which are traditionally kept as sacred areas. And of course, much of Asia's rice is still planted out as seedlings by hand, with personal care, observing ancient rites and promoting communal work as fun. No wonder the rice yields of these farmers are only ever attained elsewhere under controlled research conditions. Western groups like to argue against such facts, such as the 2010 'world record' for the Australian rice crop; but this is after the industry has shrunk to the best land in a highly favorable year and in any case refers to different rice varieties. In practical terms it makes sense to retain the yield advantages of small farms and to remain conscious of the risks of jeopardizing this when introducing new technologies – or financial tools such as credit.

Credit Where Credit's Due

Credit is indeed due to the small farmer in both senses. He feeds more people than other types of farmers, and in some cases he should be able to access sensibly designed credit lines. It is worth saying this lest those who romantically support small farmers and damn all who would change the 'noble peasant' feel too much kinship with policies to support and protect small farmers. The belief has a long pedigree, especially among intellectuals who idealize the peasant but know nothing of his lifestyle and aspirations. We see it in Tolstoy's writings and nowadays in the latest 5-star resorts of northern Thailand for example, where wealthy guests are housed in luxurious 'traditional' Thai houses and can enhance the experience by planting rice with 'real

farmers' at their back door. Credit is due to small farmers, but to argue that they must not change is to enslave them in museum dioramas.

On the other hand, as Cheryl Player comments in 'The World Bank and the Small Farmers', 'the new emphasis of the World Bank on lending to the small farmer' undermines the self-provisioning peasantry. She sees it as deliberate policy. 'This aim is sometimes achieved forcibly, as in settlement projects, and sometimes through manipulation of price relationships or through a change in tenure systems to create a private market in land: institutional credit as well as private usury can lead to debt peonage.'

How can we clarify the no-man's-land between these fixed views? I have argued that small farmers are the real Forgotten Assets of Development – the original 'fad'. I am not convinced that there is a systematic program to eradicate them; it is more benign neglect and collateral damage from poorly defined policies. The World Bank seeks to assist commercialization of some small farmers; this seems sound, except that it is easy for such a program to be expanded unthinkingly by development functionaries. This is how other small farmers that do not seek credit may end up caught in the same net. But the World Bank is not as one-eyed as the romantics who seek to maintain 'their' small farmers intact. The practical answer is real dialogue – not the belief-based development arguments that pretend to listen but really just talk to themselves. And from real dialogue, a specific policy for food security and small farmers in each poor country would be designed.

Such an approach also clarifies common misinterpretations of the lauded Grameen Bank microfinancier Muhammad Yunus and his means of using credit to assist the poor. This

has become a fad as his ideas have been widely appropriated without thinking – such as the widespread misuse of Yunus’ 2006 Nobel Peace Prize statement that ‘credit is a human right’. His perspective is that social systems can underwrite strategic yet tiny loans for purposes that enhance life at most basic levels. His credit system works – but that does not mean access to credit is a human right. Access to food, water and air are rights, if one chooses to argue the tenuous concept of rights.

Let’s be very clear – to say that credit is a right is to use Western language to advance a cause, and the cause is bringing some relief to the poor who have been neglected by aid. Their ‘rights’ are the same as anyone else’s, and if somehow credit is argued to be part of rights it is certainly not high on the priority list unless all essentials and many luxuries are already guaranteed. No, the right that Yunus is interpreting for deaf Western ears is the right of the poor and the marginalized to ‘a fair go’, to hope for their children, to health, to food, to warmth when cold, to shelter from harsh environments, to not being exploited by those who control essential resources or information. And this is the state in which many of those that he has assisted constantly live. But credit itself has no essential right-ness to it.

Credit is neither good nor bad. Forcing it on small farmers is bad. Assisting small farmers who know the risks and benefits and can afford the risk of using credit to expand production should be no different to any other business. It is a more sound – even moral – action than encouraging overuse of credit cards and even mortgages to purchase overly large houses in urban cultures. The practical response is to cease debate about credit for small farmers, and to let it rest with the other inputs of commercial

agriculture. In general terms we know the outcome of such an approach – some small farmers have the natural and intellectual resources to use credit beneficially. But many do not want credit for such reasons as;

- poor resources in terms of soil fertility or water,
- limited farm size,
- uncertainty of rainfall and markets,
- limited worldview and education, and so on.

Yet even with such limitations, those small farmers with a primary objective of feeding their family and selling whatever surplus results play a significant role in global food security. Neglecting this central point and its contribution to food security has led to a piecemeal understanding of the ingredients of successful development.

No One Recipe

In their 2009 ‘Millions Fed [by] Proven Successes in Agricultural Development’, the International Food Policy Research Institute presents an impressive outline of attempts to meet human food needs. From the 1950s estimate of about a billion hungry with famines foreseen, the Green Revolution brought new technologies to small farmers in the form of expanded irrigation and new agronomic practices. Today the number that is hungry is about the same, although the proportion has less than halved – one billion, now 17 percent. It is a curious concurrence of numbers, and causes one to question whether it is reasonable to assume that all humans can be food secure at all times. Realists will point out that there will always be some who will starve as well as some who are so maladapted to their society that they could even starve amidst plenty. Nevertheless, my preference is to answer in the positive as it provides a useful ideal while remaining realistic about the barriers to such a perfect world being achieved; that is only practical.

The barriers are many, ranging from general unwillingness to consider population control to copying of Western ideas that appear unsuited in other cultures and places. Programs that have worked to reduce small farmer numbers by assuming that they are inefficient and are unable to be integrated with modern urban supply chains fall into the category of the bizarre, if not the irresponsible. Those assumptions about small farmers have underpinned much development action since the lull that followed the great leap forward of the Green Revolution; the leap that was made by and with small farmers. In China and India where starvation was predicted to increase under those assumptions, small farmers led an agricultural boom that has reduced food insecurity in China from 303 million in 1980 to 122 million in 2004. In the same period India reduced their hungry from 262 to 231 million through small farmer based food production. Meanwhile their populations soared. By dint of their huge and increasing populations, these two successes were the major contributions to increased global food security. If ideas are to be copied, it is only practical to consider those that have worked.

The idea that has worked is to place staple foods necessary for survival in an inviolable category and to seek means to support the source of that food, small farmers. China and India did not follow the Western-devised package unquestioningly. In fact, they ignored parts and made their own policies for small farmers, food and economic development. So it should not be a surprise to learn that countries less able to stand up to the power of lenders' mono-cultural recipes for development now make up much of today's one billion hungry. This includes countries in Latin America and the Caribbean where 45 million people remain hungry, Sub-Saharan Africa where the number has

doubled from 1980 to 2004 to 212 million and parts of South Asia where despite impressive reductions 314 million are food insecure.

Such numbers of hungry persons is a threat to national and international peace. Hungry young men are prime pickings for warlords, and hunger is the major source of emigration. Leaders for millennia have known these facts. The Western culture has appropriated stories that abound in such instruction, from Pharaoh's grain stores to Vespasian's return of Rome to stability. If anything, the threat is greater today despite technology, for our populations are huge and news travels faster than ever. The Green Revolution was a return to such responsible awareness, evidenced in such forms as Nehru's post-1947 focus on rural roads and power, irrigation, agricultural universities and research centers, fertilizer manufacture and land reform in India. The mood of that era – particularly in Asia – was one of informed policy and action. Western scientists were involved, but were not the only source of the change. It was practical, and there was no one recipe.

As small farmers were at the centre of the Green Revolution, the modern 'discovery' that communities should be given a stake in the development process must be seen as facile. 'Grassroots participation' was critical to the Revolution, yet that element dropped out of programs somewhere. It reminds me of some of today's 'research' in third-world universities where the ignorance of Western-influenced scientists leads them into quasi-anthropological studies to define the foreign phenomenon of small farmers. From Africa to South East Asia, fashion shoes and air-conditioning have replaced boots and camping kits in the toolbox of development planners and researchers alike. The Revolution was not made by such as these, but by small farmers gaining

access to technologies that they adapted with assistance from dedicated and practical scientists.

After listing a sample of the usual successes in international agriculture, the IFPRI document referred to above observes that 'success is not a substitute for strategy'. As policy researchers they might well have said that 'success is not a substitute for policy' – and in fact success seems to have occurred despite the recommended policies. The policies that IFPRI advocates are complex for they cover diverse fields in response to donor politics – but they tend to address the small farmer as an ignorant and perhaps temporary necessity of development. Surely it is more practical to start with policy focusing on national survival food security and small farmers rather than a combination of global political footballs ranging from carbon sequestration, to climate change abatement, to global trade theory, to rigid conceptions of private sector involvement in food production, to grab-bags of nice social statements and urban middle class values.

But it is not reasonable to expect Western-based and educated researchers to start from that perspective. If development approaches are determined in meetings of international agencies, it is no wonder that existing programs are thought to be useful and declining funding is seen as the problem. And once money is mentioned, justifications to attract it drive the policy researchers to assess the impact of investments in agricultural development. Donors then become accustomed to making aid allocations on the basis of such assessments and policymakers feel it is logical to write policy around this phenomenon. Having oriented the process to their worldview, the policy researchers can then analyze its performance and recommend refinements to the now unquestioned approach. As the IFPRI report observes, the 'body of evidence can then be synthesized to build a

knowledge base on what works and what does not'. But precious little of that approach takes cognizance of alternatives. It is more practical to observe what works for the most basic things of life because it is that which determines other development possibilities and sustainability; both of those boil down to staple and survival foods and who produces them.

This chapter has considered some key aspects of securing food staples and supporting small farmers as the major producers. It has suggested practical means of moving forward. The arguments about most of these aspects are known and where necessary have been summarized, but the main point is that the time for academic discussion has passed. I am far from being a Malthusian, yet I must say that I find that the current level of ignorance about the world's precarious food supply to be the most serious issue facing mankind. In the past it wasn't, because starvation was largely limited to climate and political events and the victims died quietly. Today, with instant communications and most people living in cities, a hiccup in food supply quickly leads to riots, which spread like a contagion. Victims riot, anarchy visits and then mass emigration threatens all countries. The next step would likely be military control of the borders of rich countries, which by definition have secure food supplies. This would mean the deliberate sacrifice of a billion or so persons in poor countries.

When the ideological veneer of what seem misguided policies related to food security in international agencies is stripped away, they may be seen as serving much the same outcome as sacrificing lives. That reality is not the subject of this book – the alternative is. That is, recognizing that practical measures can be taken within existing budgets and

expertise as introduced in this chapter. Those measures will now be teased out a little further in a wider context in the final chapter.

Chapter 8

Practical Food Security from Small Farmers

This final chapter rounds off the preceding arguments and contextualizes them. The main themes of viable security in survival foods and the role of both small and large farms are emphasized as immediate and foreseeable future imperatives. But at the same time, other approaches to food production will become important, including new foods that will challenge current mindsets. But before that, there is one absolutely critical matter that development leaders have chosen to keep in the closet; it is politically incorrect to even speak its name in the comfy halls of global power.

The Human Plague

Yes, before all else, what one wit called the perennially precluded problem of the pachyderm in the parlor – population – must be mentioned. It has all been said before and all been hushed up. The conclusion is now clearly expressed in Roger Short's 2009 paper in the prestigious *Philosophical Transactions of the Royal Society* entitled 'Population Growth in Retrospect and Prospect', as follows. 'International Organizations, Governments and Religious Leaders will be the last to appreciate the gravity of the current situation, and the last to implement effective measures to halt further population growth.' As he points out, the UN Millennium Development Goals – the same ones that fail to address food security for survival – omitted population in its first public iteration, tacking it on half-heartedly later.

Any scientist and rational thinker will link, as did Darwin

and Wallace more than a century ago, Malthus' intuition about the limits to population growth and natural selection, which at the species level is still described as survival of the fittest. This is why elite thinkers argue for sensible limits on human population, and why theoreticians postulate catastrophic ends for 40-80 percent of the same population predicted from the UN's 'optimistic' future scenario. I am told it is un-American to laud China's successes in this era – that is really an unfortunate truth, and illogical. China's population policy has served a widespread and enduring public education function. And it certainly makes more sense than the irresponsibly xenophobic policies of some Western countries for white families to have more children.

Imagine a world with, as Roger Short paraphrases from research that relates biology to wars, 'excessive numbers of uneducated, unemployable, testosterone-driven young men who see terrorism as their only way to fight the system'. Then add to that a genuine survival drive when food supply is not secure. The result is a situation that affects everyone through migration and conflict. The lessons are already stark: forget comfortable discussions of domestic 'sustainable populations' and environmental preservation if neighboring countries are food insecure. Food always comes first – and the food that keeps conflict and migration at bay comes from small more than large farms.

Farm Size and World Hunger

Let's list some facts:

- Food security has been misinterpreted to include too many simultaneous and difficult objectives, such that current definitions are ipso facto unattainable
- Historical record and current experience teaches that ensuring a populace has an assured level of basic food

for reasonably healthy survival defines good governance from tribal to national levels

- Ensuring basic food for reasonably healthy survival is the common denominator of food security in both practical and moral terms
- Current producers of basic food for reasonably healthy survival are overwhelmingly small farmers, most of whom operate at subsistence level
- More than half of the world's seven billion odd people live in cities, food delivery to which accrues wastage and processing losses
- Where food supply to cities has not been ensured, riots and anarchy have resulted through history, and continue to occur today
- Meeting future food demand for a projected nine (or 11) billion population will require all farming operations to be more productive than at present
- Research that stimulates continuous improvement in agricultural yields is overwhelmingly focused on broadacre farming, yet small farms feed most of the world
- Policies that marginalize or even seek the demise of small farms abound, based on erroneous understandings of both current food production and the role of basic food for reasonably healthy survival as the definition of food security and a major economic good.

The details of these facts may be contested, but their general thrust will be widely accepted – soon I hope. To further explain this, a means of linking farm size and food needs is presented in the matrix below. This shows that reliance on broadacre farming alone for traded food would lead to increased food costs and lower levels of food supply, which would produce higher levels of starvation in urban areas than if small farmers provided some food for cities. Even

worse, if all small farms were converted to broadacre, the higher food costs would be compounded by higher welfare costs for the displaced farmers at the same time as total food production declined, leading to even higher levels of starvation in both urban and rural areas.

On the other hand, a sensible balance between broadacre and small farms based on efficiencies of production of essential food would represent the lowest overall cost for the greatest overall food production. It would work against rural emigration with its high welfare cost. Food supply would be self-sufficient on most small farms and those with commercial potential would sell surpluses to provide a higher food output than other scenarios. This situation would resume past trends of continual reductions in the proportions of persons starving.

The matrix also includes a line for non-agricultural foods, which find little market while natural foods are sold cheaply as at present. These food production processes suit industrial economies of scale and hence the availability of such foods would depend on largess from food owners. As these products can theoretically offer the gift of basic food for reasonably healthy survival, they must also be factored into any discussion of future food.

Small farmers are here to stay for the foreseeable future. Not only that, they are essential as a key to the best possible scenario of providing basic food for reasonably healthy survival to the majority of the world's population. Agency and government actions and policies to replace them with lower-yielding energy-intensive broadacre farms should be reversed. The private sector supports the broadacre sector and will do it better than any civil servant, international or national. Likewise, it is time for narrow-minded NGOs to get

over past prejudices about large farms.

SIMPLIFYING THE DISCUSSION – SMALL FARMERS OR NOT?

Food Source	Food and Welfare Costs	Food Supply	Proportion Starving
Broadacre only source of traded food i.e. small farmers only subsist	Urban food costs rise with increased urban demand supplied from use of land less suited to broadacre farming.	Reduced supply to cities as small farmers who are increasingly integrated in modern non-Western supermarkets are excluded from supplying.	Increase in urban areas.
All small farm lands converted to broadacre farming	As above plus: increased welfare costs for millions of displaced small farmers.	Reduced total supply of food as areas suited to intensive management from small farmers are extensively managed, compounded by increased demand from displaced small farmers.	Increase in rural and urban areas.
Integrated small farm and broadacre systems	Low costs from greatest overall food production from resources including labour suited to non-broadacre technologies with minimal rural emigration and hence lower welfare costs.	Maximized urban supply from commercial broadacre and small farms as well as surpluses above subsistence from other small farms, with continued rural self-sufficiency.	Resume trend of decreasing proportions as integrated policy better supports specific needs of different sectors.
Non-agricultural foods	Production costs preclude widespread introduction until natural food prices are high and food scarce	Supply fits into routine industrial economic formulae more readily than does agriculturally-produced food.	Dependent on largess of food owners.

Disagreements about the environmental costs of agricultural monocultures are passé. They are pervaded by irrational views that imagine one part of the world is unaffected by others – that a remote and fortunate island like Australia, for example, has no association with three billion people within its hemisphere. As already stated, the world needs both industrial and small farms. Part of the foreseeable future is clearly visible in Brazil’s savannah lands, with its mega-farms using state-of-the-art technology developed in-country. And it does not rely on rain-forest lands as myth-makers seek to perpetuate. This is indicative of where bulk food for urban dwellers of mega-cities will increasingly come from. Why? Because there is potential for even more of such development.

But wait – isn’t it so often said that we have already run out of new land for food production? Elsewhere in this book I have quoted some estimates that may seem to say just that. So let’s be clear – there is much sleight of hand in scripting these figures. Those who maintain that agriculture should

not expand into any new lands because this would compromise the environment define non-agricultural land as environmental space and so unavailable. Those who define potential agricultural land according to current knowledge similarly limit expansion to that definition. Yet the Brazilian example involves huge land tracts defined as unsuitable for agriculture by what was, until recently, current knowledge. Decades of adaptive research produced crops and soil amelioration techniques that made the area productive. Vietnam's Sarai area was similarly defined as 'completely intractable acid sulphate soils', yet as the leading Vietnamese international agriculturist Vo Tong Xuan notes, it is now some of Asia's most productive land.

The major agricultural exporters – USA, Canada, Australia, Argentina and the EU – are being joined by Brazil, which now leads the world in exports of orange juice, sugar, chickens, coffee and beef and is number two for soybeans and maize. Among other things, this confirms that research fuels agricultural land expansion. That is the basis of FAO suggestion that potential areas for expansion may total: 400 million hectares in Brazil; 200 in each of the USA and Russia; 150 in India; 100 in China, and 75-85 in each of Australia, Canada and Argentina. China and India are using a higher proportion of their suitable land under this definition as they must feed their billions, yet even those countries could significantly expand their agricultural areas if expected technological development is factored in. Rather than dismiss large-scale farming as if it is an option, these figures indicate that expansion of such farming will occur and need not displace efficient small farmers.

Such expansion of large-scale farming will occur despite well-meaning protests. The primary driver will be food prices. This is why there is silent joy in the investment sector

as food prices continue to rise after their 40-year lull. And this is why small farmers are doubly important – because they feed themselves already and send some surplus to urban hungry ghosts. And this is why the most vulnerable are now and will increasingly be the urban poor who will not be able to afford food to survive if food prices rise. It is they who will destabilize governments again, as they have through history. Which, to complete the cycle of relationships, is why governments will continue to close off exports when domestic food is in short supply, and why they promote economic development in the hope of increasing the purchasing power of the poor. Like it or not, we are all caught up in this global system, whether we live in Ladakh or Luxembourg.

We are now seeing farming of foreign lands as a response to food demand. Ignorant references to ‘land grabs’ miss the implications of this expanded food production so completely that they illustrate the depth of rich country misconceptions. They also ignore the huge Western foreign ownership of agricultural lands. Apart from eloquently emphasizing the immediacy of the food problem, this foreign expansion is showing how inefficient aid and local capital has been in increasing production in the countries concerned. Put simply, where underutilized and suitable land exists, investment capital and technology are usually lacking. Bringing capital and knowledge to suitable lands increases food production. And it is not bad news for small farmers, as the precarious status of the foreign investor encourages equitable interactions with them. Thus we see foreign investment allocated to small farmers with commercial potential to mutual benefit, and often in places where decades of aid projects have failed to make an impact. It is not all rosy, but so far it is more good than bad. In any case foreign capital and expertise is more often applied to the

opening of new or upgrading unused lands that can be developed as broadacre farms.

Is this broadacre monoculture the answer then? No, but it is part of the answer; a part that needs little involvement by government or assistance from international agencies beyond honest regulation. The main focus of the agencies should be the primary concern of responsible governments in poor populous countries, which is food for the nation and support for its producers. As we have seen, these are small farmers who survive without external assistance and allow a significant number of others to also survive. This should be the focus for international development. But it is not at present. We need to revise current views on both small farmers and survival food security.

Revising Present Views

In terms of small farms, a first response is to acknowledge where they are efficient and to support them; this means being objective about efficiency, not just measuring against a foreign cultural assumption. Where they are not efficient, means by which they can be improved must be sought. This may mean farm consolidation, but more likely it will be a technological and social infrastructural solution informed by an holistic economic analysis. Where small farms are efficient but under threat, they must be protected – for they are the engine of survival food security. The next step is to segregate small farmers into those with a primary subsistence focus and that smaller fraction with commercial potential, which will allow appropriate development policies to be enunciated.

With this focus, policies concerning food security and small farmers would not be automatically mixed with policies

about poverty alleviation, gender equity, environmental protection and so on. Those well-meaning policies may come later but are really secondary to basic food security for survival. For development agencies, mixing those global political agenda with such an essential subject as survival food security must be curbed to avoid the further grave risks introduced in the previous section. Better to support continued innovation to increase food production and its efficiencies.

As innovation that supports basic food security for survival often comes from small farmers and fishermen themselves, research planning would logically interact with them. This will focus applied research on practical matters. At the other end of the research spectrum, such issues as GMOs and ownership of genetic material would likewise be separated from lobby politics and dealt with objectively in policies for survival food security, for protection of small farmers from unsuited genetic material and for investing them with ownership. This approach allows creativity to remain with the farmer – the first important principle as learned from Grameen Bank experience, regardless of whether credit is used or not. Of course the need for untied and increased research budgets with long-term commitments remains and informed liaison with small farmers should assist in practical measures to move away from the donor fad-based funding of recent years.

In the same vein, impractical irrigation schemes that ignore the water and drainage needs of small farmers urgently require redressing in the face of water competition as well as small farmer innovations that may not be sustainable, such as groundwater pumping. The demand expressed by such actions is a guide for research and investment rather than just a focus for sanctions. These lessons may be learned from

China and India more than Western nations, especially given their successes in basic food security. This would highlight for example, that making small farmers into large commercial producers and interpreting a lack of investment capital as a need for credit are peculiarly Western solutions, and ultimately narrow-minded. The lesson also extends to reinventing communication according to new technologies and farmer learning modalities.

While perhaps not yet valued by the international agencies, the virtues of small farmers in terms of gaining higher levels of individual animal productivity, ethical treatment of animals and human-animal interactions have intrinsic benefits across a society otherwise alienated from its food and nature. Just as in the Green Revolution an appreciation of cultural values of small farmers, informed policy and action can also enhance today's focus.

An holistic economic view would see security of basic food for survival as a prerequisite for any development and hence of very high value. It would then see small farmers in a national context as contributing to the security of the State as well as to containing the welfare costs of displaced farmers under alternative models. Such an understanding would lead to a realization that small farmers who do not participate in the monetized part of the economy are contributing substantially more to the overall national economy than the majority of urban residents. So why treat them inequitably in terms of social infrastructure. GDP can miss such values as it is a crude indicator, and can even be dangerous for food policymaking. The objective of investment should then be to maintain a viable sedentary rural population base valued by the nation.

These revised views will allow an improvement in current investments by international development agencies and governments of poor countries. Whether the international community is going to vote increased funds for such development in the future or not, the actions implied in this revised view will assist in increasing the productive output of whatever funds are available. The message is the same as that of the late and great international agriculturist Derek Tribe's eloquent 'Doing Well by Doing Good' in which he described how aid allocations to food research are not just good for the poor world, but actually help donor countries also.

Today we see rich country benefits not only in terms of trade but in terms of global stability and safety. The benefits of doing good are now even greater. The present contains both the seeds of peace and conflict – the latter requires constant vigilance to weed them out. But we do well to water the seeds of peace by supporting small farmers and making countries food secure at least at the level of survival. This also means examining options for future food, including alternative food products – a subject that while not exhausted here, will soon be central to basic food security discussions.

Future Food

If prophecy is the gift of interpreting the will of the gods, it has an implication of accepting the inevitable. Perhaps that is why it does not enjoy its past levels of respect in societies convinced that they can control and sustain whatever they want. Chapter 2 opened with what is regarded by many as a prophecy, yet can be explained as a social commentary. So rather than predict the future, this section comments on some existing trends that may broaden the issue of food

security. However, even if new technologies increase the availability of food globally to the levels in rich nations, it will probably not obviate the need to maintain small farmers in secure rural lives for their families.

It is common to hear that food shortages could be met by redirecting animal feed grains to humans; or that vegetarianism can avoid the feed conversion losses of meat, milk and egg production. But neither idea is practical. First, the feed grains used in rich countries to produce tender meat are not produced in the countries that will need food and there is little evidence of a rich nation changing its lifestyle to assist another. Second and for the same reasons, it is unlikely that meat eating will go out of fashion simply because it helps other people. At present, global meat consumption continues to rise in response to middle class affluence in countries such as China. But these two ideas indicate a small if theoretical reserve in the current system, and so can at least be food for thought. Experience has taught us to plan on the assumption of human selfishness and to seek to mollify its effects by effective regulation. In the current era, regulation of the private sector is all that is implied as it will be the leader of innovation. Innovation cannot be expected from well-meaning international agencies and groups, and not governments alone. Thus we should look a little further ahead than such otherwise rational ideas as vegetarianism.

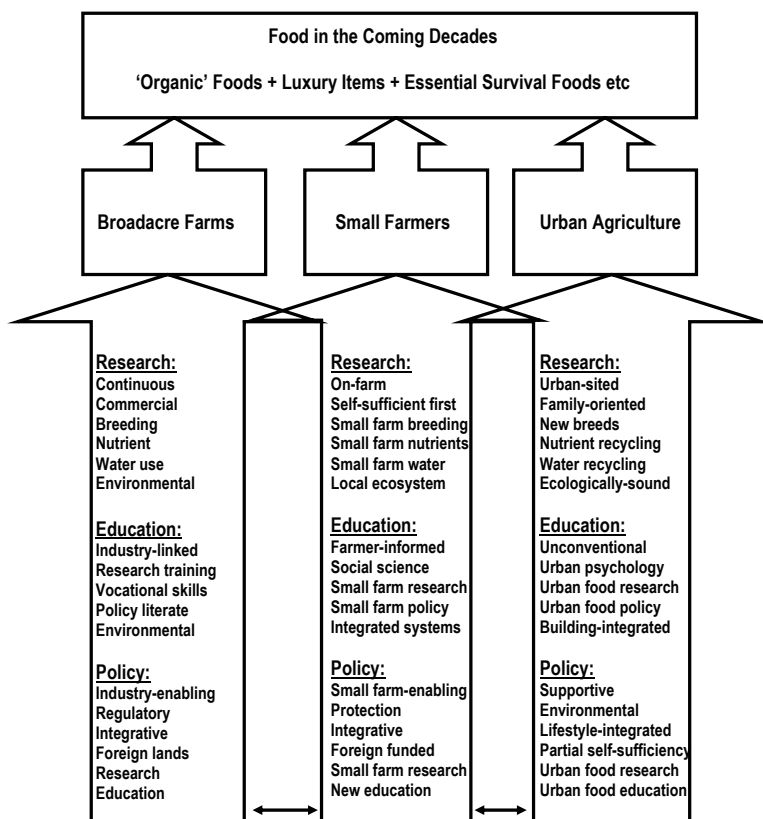
Jumping over the immediate future, alternative food sources may be expected to be of importance. This does not simply mean food production inside cities – that is an immediate need albeit poorly addressed by those who claim to work against starvation. Alternative foods here means new food sources and non-agricultural foods – both of which are currently viable if not yet widely acceptable. New food sources include species not commonly eaten; it can mean

introducing a cuisine from another culture such as large rodents for meat as practiced in some Latin American countries. Or it could be introducing something not commonly eaten such as animals classified as vermin or plants from the sea. The much higher economic efficiency of consuming rabbits, camels and kangaroos rather than beef or mutton has long been known, if not practiced, in countries like Australia; but they remain a food bank for the future.

Non-agricultural foods such as fermentation products from food wastes may be the next more acceptable alternative products, followed by products from non-food organic substrates such as oil. Algal products, already used in the food processing industry, may also be expected to make additional contributions to future diets. However, the expense of production of most synthetic foods may preclude their unsubsidized use in periods of extreme food deficit in poor countries. But it will be interesting to watch how society plays out its questions. Who will be – who will eat – the guinea pig?

Before such things come to pass, current research and development is likely to provide bio-refineries – industries that harness natural processes to yield useful products. Already some mature technologies can be scaled up to commercially viable volumes, although the main products so far have been biodegradable plastics, catalysts, industrial chemicals and cosmetics. In this emerging world of technology, governments like the US have been distractedly investing in uneconomic bio-fuels while industry has remained oriented to practical and profitable long-term investments, some of which may produce alternatives to agriculture. The best science is following the best opportunities, fortunately in this case, although payoffs may be decades away.

Even closer to the present, food in coming decades is considered in the following diagram, which links broadacre farms, small farmers and urban agriculture as suppliers of food. The food they supply may be 'organic' in the popular sense of the word, which may be sourced from small farmers who can more easily implement alternative pest control and manure strategies than can broadacre farms. It also includes luxury items that can be produced by both small and large farmers. The category of food that we have discussed in this book – essential food for healthy survival – will also come from all sources, although the majority seems destined to continue to rely on small farmers in populous poor countries.



Each of the three production types mentioned rely on specific research, education and policy, examples of which are detailed in the diagram. This implies a need for creating specific and separate approaches to small farmer and urban food production support. To do this, the limited research budgets of development agencies should be refocused on these two areas with policy following suit. Education is a separate and complex matter that has not been dealt with in this book; it is included in the diagram to highlight that informed researchers and policy-makers must be formed

somewhere. Current training has proven to be overly oriented to commercial or market paradigms with the consequence of misjudging the centrality of basic food security for healthy survival and the contribution of small farmers to it. Reorienting tertiary education in the face of current mindsets will be a huge task in itself; one that will require changes in worldviews and examining of lost truths – lest we forget until the next famine.

Earlier in this book, I criticized Harwood for blithely assuming a continuum from hunter/gatherers to simple agriculture to peasant farmers to commercial broadacre farming. It is a convenient worldview that constructs history as progress. But we are now more conscious of our unproductive predilection to view the past through our present weltanschauung – the most dominant aspect of which is the concept of progress. That is where Harwood's mistake lay, and where much of our error lies in assuming that the currency of money can substitute for the currency of basic survival food – which after all seems to be the worldview of the now majority urban-dwellers of the world. For small farmers close to subsistence, essential food will remain the strong currency, and when that food is in short supply, the bad penny will circulate so fast that we can expect that majority with a money-centric worldview to rail against food price stagflation. In a more rational world, essential food and the few other real essentials of life – basic shelter, basic care when ill and essential clothes for protection from the elements – would not be monetized. Even in a supra-rational world food becomes the main currency as Primo Levi reminds us from his subhuman treatment at Auschwitz. The sooner we recall this truth of human nature, which we have only forgotten since two generations ago, the sooner the economic development theories will begin to work.

The message of the book is simple. It is that securing food for healthy survival – a minimal level of reasonable existence – should be enshrined in all development objectives. At present, it exists as a watered down version aspiring to provide food preferences, and in all sizable agencies it is combined with multiple conflicting objectives. This makes current approaches unworkable. At the same time, individual countries reject development agency directives and advice when faced with food shortages, and in so doing act out human behavior that has been consistent since before civilizations arose and ever since. A refocusing on food for reasonably healthy survival leads directly to the main food producers, small farmers, who feed two billion of themselves and a proportion of those swelling megacities. In such cities, food shortages can now inflame riots and anarchy even more than they have through history. They thereby confirm that basic food security is a first step towards the good governance that can lead to socio-economic development. Nothing is guaranteed – except failure if essential food is not put first in populous poor countries. China and India offer lessons not derivable from the West, including the primacy of well-directed research and policies concerning small farms and real food security.

First Food!

My soul's secure when I must muse
how word's endure from sage's cues
about their insight for man's health,
which all men cite yet trade for wealth.

First commandment in all creeds
remains constant - for basic needs:
*"no civil man forsakes the farm
that bears his bran and breeds the balm
of Ceres' gift of daily bread
that all men lifts from hunger's dread."*

The second is like unto it:
*"societies that don't admit
the need for grain for all their folk,
do thus profane, and pain invoke;
for never's man calm peace enjoyed
when food is scant and hope destroyed,
not goods nor gods, not gain nor greed
increase the odds to live and breed
if farm and food doth fail, then war
will more preclude 'till all are poor."*

From dying lips the calls arise
for leadership to realize;
that gran'ries filled all else secures,
that soils tilled gives arts tenure,
that civil life needs feeding first,
that crime's made rife by hunger's thirst.
For 'tis truth yet all need examine
Lest we forget until next famine.

30 July 2010

Some Acronyms:

All acronyms are explained in the text, and are reproduced here for convenience if sections are read without that context.

ADB	Asian Development Bank
AO	Order of Australia
ARI	Advanced Research Institution
ASEAN	Association of South East Asian Nations
Ausaid	Australian aid
CABI	once known as 'Commonwealth Agricultural Bureau'
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Centre for Maize and Wheat Improvement
EADS	European Aeronautic Defence and Space Company
FAD	Forgotten Assets of Development (= small farmers)
FAO	Food and Agriculture Organisation (of the UN)
FAOSTAT	FAO's statistical service
FTSE	Fellow of the Academy of Technological Science and Engineering
GM	Genetically Modified
ICRISAT	International Centre for Research in the Semi-Arid Tropics
IFAD	International Fund for Agricultural Development
IMF	International Monetary Fund
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
IPCC	International Panel of Climate Change
IFPRI	International Food Policy Research Institute
IRRI	International Rice Research Institute
LDC	Less Development Country
MDC	More Developed Country
MDG	Millennium Development Goal (of the UN)
NAR	National Agricultural Research
NGO	Non Government Organization
OBE	Order of the British Empire
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
UN	United Nations
USAID	United States Agency for International Development
WFP	World Food Programme
WTO	World Trade Organisation

Agricultural books by the same author:

1. Religion and Agriculture: Sustainability in Christianity and Buddhism. 290pp. Institute for International Development, Adelaide (2005)*
2. Sustainability: Elusive or Illusory? Wise Environmental Intervention. 245pp. Institute for International Development Fund, Adelaide (2004)*
3. Thai Agriculture: Golden Cradle of Millennia. 490pp. Kasetsart University Press (international distributor, White Lotus), Bangkok. (2000)*
4. การเกษตรไทย: อุ้งข้าวอุ้งน้ำข้ามสหัสวรรษ. จรัญ จันทลักขณา (บรรณาธิการ), แมนมาส จันทลักขณา และคณะ (ผู้แปล) สำนักพิมพ์มหาวิทยาลัยเกษตรศาสตร์, กรุงเทพฯ. 476 หน้า. (2548) translation of previous entry (2003) *
5. Smallholder Dairying in the Tropics (with Charan Chantalakhana). 447pp. International Livestock Research Institute CGIAR, Nairobi. (1999)*
6. Land and Food: Agricultural and Related Education in the Victorian Colleges and the University of Melbourne (with Barrie Bardsley). 266pp. Institute of Land and Food Resources, University of Melbourne. (1997)*
7. Food Environment Education: Agricultural Education in Natural Resource Management. 280pp. The Crawford Fund and the Institute for International Development. (1996)*
8. Introduction to Working Animals; 200pp; MPW Australia, Melbourne (1988).
9. Sú Dung Đông Vật Làm Viêc. 122pp. (translation of previous entry by Châu Bá Lộc). Can Tho University, Vietnam. (1989).
10. Cattle and Sheep in Northern Thailand; 104pp. MPW Australia. (1979).

[* indicates full text available on the web: see one or more of Google Books, University of Melbourne, Institute for International Development or publisher's sites. Titles on other themes not listed]